2. WSDOT Policy Adjustments

2.2.1.1 Scalars Tab

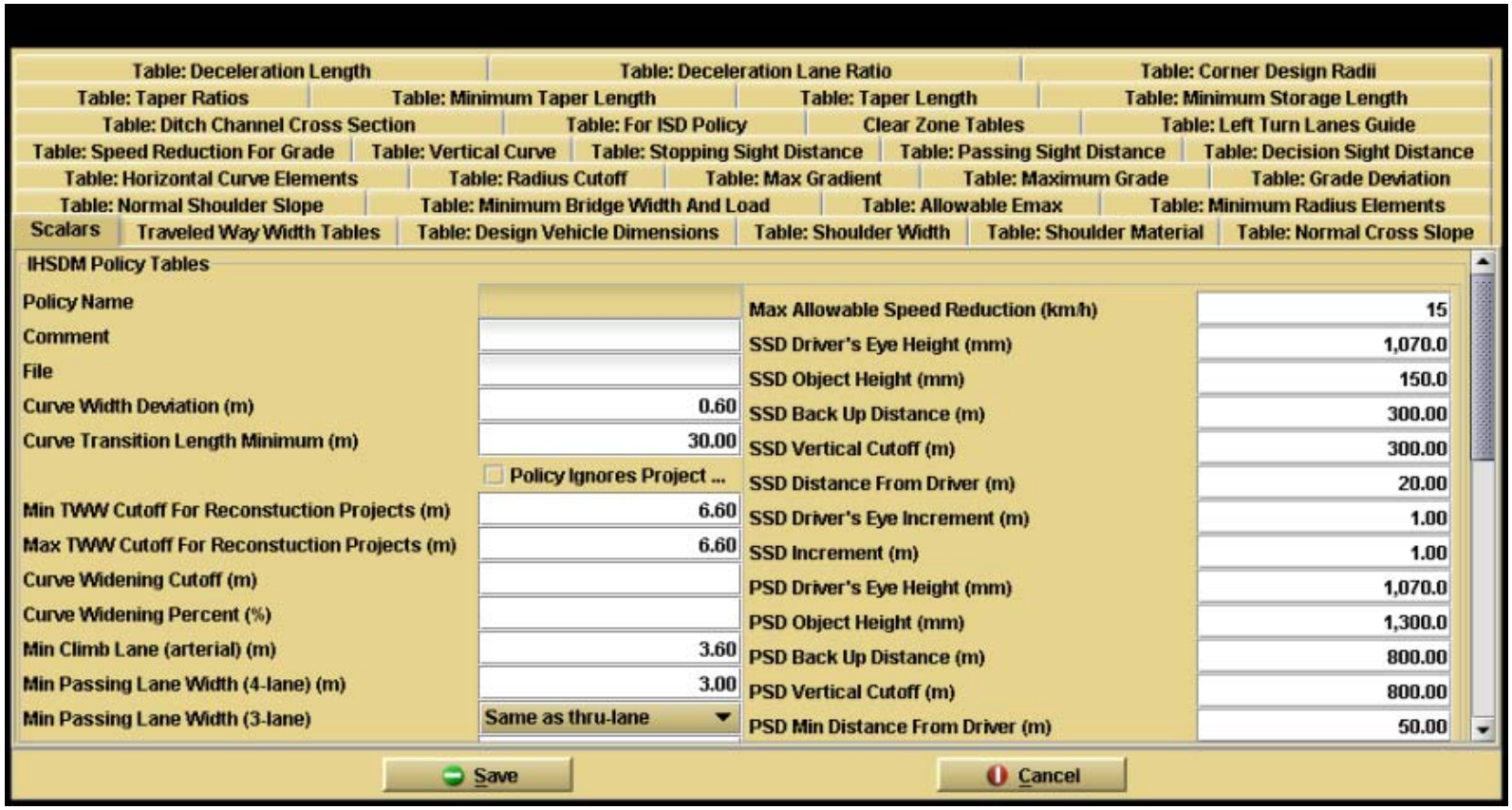

Figure 1 Scalars Tab

The `Scalars` tab includes the following widgets: Policy Name, Comment, File, Curve Width Deviation, Curve Transition Length Minimum, Policy Ignores Project Type, Min TWW Cutoff For Reconstuction Projects, Max TWW Cutoff For Reconstuction Projects, Curve Widening Cutoff, Curve Widening Percent, Min Climb Lane (arterial), Min Passing Lane Width (4-lane), Min Passing Lane Width (3-lane), Max Passing Lane Width, Min Turning Lane, Min TWW, Min Bike Width, Maximum Cross Slope Rollover On Curve (High Side), Cross Slope Rollover On Curve (Low Side), Cross Slope Rollover (Low Side) Deviation, Cross Slope Rollover Increment, Use DHV For MinBridgeTable Lookups, E Deviation, Max Urban eMax, Max Design Speed, Min Design Speed, Runoff From Value, Runoff To Value, Runoff Deviation, Max CCR, Arterial Shoulder Width Cutoff, Minimum Grade, Max Allowable Speed Reduction, SSD Driver's Eye Height, SSD Object Height, SSD Back Up Distance, SSD Vertical Cutoff, SSD Distance From Driver, SSD Driver's Eye Increment, SSD Increment, PSD Driver's Eye Height, PSD Object Height, PSD Back Up Distance, PSD Vertical

Cutoff, PSD Min Distance From Driver, PSD Driver's Eye Increment, PSD Increment, DSD Driver's Eye Height, DSD Object Height, DSD Driver's Eye Increment, ISD Driver's Eye Height, ISD Eye Offset, ISD Object Height, Slope Cutoff, Cut Slope Maximum, Fill Slope Maximum, Minimum Clear Zone Curve Correction Radius, Minimum Collector Clear Zone Curve Correction Speed, Maximum Offset Added To Lane Width Due To Curb., Minimum Offset Added To Lane Width Due To Curb., Allowable Leg Angle Delta, Minimum Taper Tangent, Maximum Taper Tangent and Maximum Number of Legs.

- **Policy Name** - Widget type: text field (read-only). The value of this item is the name of the policy. The policy name is unique within the system.
- **Comment** - Widget type: text field. The value of this item is an optional descriptive comment about the policy.
- **File** - Widget type: text field. The value of this item is the base file name of the policy. The value of the item is generated by the system from the policy name.
- **Curve Width Deviation** - Widget type: text field. Unit of measure: meters (feet). This item is the curve width deviation. Horizontal curves are sometimes constructed to be wider than the preceding traveled way. This allows room for offtracking (when the rear axle of a vehicle tracks inside the front axle) and to account for the difficulty drivers may have in steering in the center of the lane. A minimum widening of 0.6 m should be used since less widening does not provide much additional benefit. Recommended curve widening amounts based on design vehicle, curve radius, traveled way width, and design speed are given in AASHTO policy. The unit of measure for this item is meters (feet).

  WSDOT uses 1 foot for its Curve Width Deviation.

- **Curve Transition Length Minimum** - Widget type: text field. Unit of measure: meters (feet). This item is the curve transition length minimum. On curves that do not have spiral transitions, widening should only occur on the inside edge of the curve. The widening should be attained gradually, preferably over the superelevation runoff length, generally over a length of 30 to 60 m. Part of the widening should occur on the tangent and part on the curve. The unit of measure for this item is meters (feet).

  WSDOT uses 25 feet for its Curve Transition Length Minimum.

- **Policy Ignores Project Type** - Widget type: check box. This item specifies whether there is no difference between new and reconstruction projects for the policy. Enable this item to specify that the project type is ignored.
- **Min TWW Cutoff For Reconstuction Projects** - Widget type: text field. Unit of measure: meters (feet). This item is the mimimum TWW Cutoff for reconstruction projects. Full width lanes are desirable, but right-of-way may be limited on existing alignments, necessitating the use of narrower lanes. If the project is a reconstruction, the TWW policy is *Max TWW Cutoff For Reconstuction Projects*, but the highway is greater than or equal to this value, a message saying check the safety history is generated. The unit of measure for this item is meters (feet).
- **Max TWW Cutoff For Reconstuction Projects** - Widget type: text field. Unit of measure: meters (feet). This item is the maximum TWW Cutoff for reconstruction projects. Full width lanes are desirable, but right-of-way may be

limited on existing alignments, necessitating the use of narrower lanes. If the project is a reconstruction, the TWW policy is this value, but the highway is greater than or equal to the *Min TWW Cutoff For Reconstuction Projects*, a message saying check the safety history is generated. The unit of measure for this item is meters (feet).

- **Curve Widening Cutoff** - Widget type: text field. Unit of measure: meters (feet). This item determines if any curve widening value less than this value may be ignored. The unit of measure for this item is meters (feet).

  WSDOT uses 1 foot for its Curve Widening Cutoff.

- **Curve Widening Percent** - Widget type: text field. Unit of measure: percent. This item is the percent of curve widening added to the policy TWW that must be obtained at the ends of curves. The unit of measure for this item is percent.
- **Min Climb Lane (arterial)** - Widget type: text field. Unit of measure: meters (feet). This item is the minimum width of a climbing lane for arterial segments. This item is used in the PRM Auxiliary Lane Width check. The unit of measure for this item is meters (feet).
- **Min Passing Lane Width (4-lane)** - Widget type: text field. Unit of measure: meters (feet). This item is the minimum width of a passing lane when the passing lane is part of four-lane segments. This item is used in the PRM Auxiliary Lane Width check. The unit of measure for this item is meters (feet).

  WSDOT uses 12 feet for its Min Passing Lane Width.

- **Min Passing Lane Width (3-lane)** - Widget type: combo box. This item is the minimum width of a passing lane when the passing lane is part of three-lane segments. This item is used in the PRM Auxiliary Lane Width check. The enumeration values are: `Same as thru-lane` and `Use 4-lane value`.

  WSDOT uses 12 feet for its Min Passing Lane Width.

- **Max Passing Lane Width** - Widget type: text field. Unit of measure: meters (feet). This item is the maximum width of a passing lane. This item is used in the PRM Auxiliary Lane Width check. The unit of measure for this item is meters (feet).
- **Min Turning Lane** - Widget type: text field. Unit of measure: meters (feet). This item is the minimum width of turning lane. The unit of measure for this item is meters (feet).

  WSDOT uses 11 feet for its Min Turning Lane.

- **Min TWW** - Widget type: text field. Unit of measure: meters (feet). This item is the minimum width of traveled way for a four lane section. The unit of measure for this item is meters (feet).

  WSDOT uses 44 feet for its Min TWW.

- **Min Bike Width** - Widget type: text field. Unit of measure: meters (feet). This item is the minimum shoulder width for bicycle accommodation. The unit of measure for this item is meters (feet).
- **Maximum Cross Slope Rollover On Curve (High Side)** - Widget type: text field. Unit of measure: percent. This item is the cross slope rollover on a curve. Cross slope rollover criteria minimized the algebraic difference in cross slopes of the shoulder and traveled way, to reduce potential operational problems for vehicles that leave the curve on the outside and encroach on the shoulder sloped away from their path. The unit of measure for this item is percent.
- **Cross Slope Rollover On Curve (Low Side)** - Widget type: text field. Unit of measure: percent. This item is the cross slope rollover rate on horizontal curves. Cross slope rollover criteria minimized the algebraic difference in cross slopes of the shoulder and traveled way, to reduce potential operational problems for vehicles that leave the curve on the outside and encroach on the shoulder sloped away from their path. The unit of measure for this item is percent.
- **Cross Slope Rollover (Low Side) Deviation** - Widget type: text field. Unit of measure: percent. This item is the cross slope rollover rate on horizontal curves. Cross slope rollover criteria minimized the algebraic difference in cross slopes of the shoulder and traveled way, to reduce potential operational problems for vehicles that leave the curve on the outside and encroach on the shoulder sloped away from their path. The unit of measure for this item is percent.
- **Cross Slope Rollover Increment** - Widget type: text field. Unit of measure: meters (feet). This item is the cross slope rollover policy check. It steps through the length of a horizontal curve using this increment. The unit of measure for this item is meters (feet).
- **Use DHV For MinBridgeTable Lookups** - Widget type: combo box. This combo box determines if the AASHTO 1990 tables have a DHV lookup. When this element is set to 'yes', the MinBridgeDHVValues table will be checked before the MinBridgeValues table. The enumeration values are: **`no`** and **`yes`**.
- **E Deviation** - Widget type: text field. Unit of measure: percent. This item is the deviation of actual or designed superelevation rate from the rate in AASHTO 1994 III-7-11 tables (the values should be close). The unit of measure for this item is percent.
- **Max Urban eMax** - Widget type: text field. Unit of measure: percent. This item is the maximum eMax value associated with urban conditions in the eMax bounds checks. The unit of measure for this item is percent.
- **Max Design Speed** - Widget type: text field. Unit of measure: kilometers/hour (miles/hour). The value of this item is the maximum design speed supported by the policy tables. The unit of measure for this item is kilometers/hour (miles/hour).
- **Min Design Speed** - Widget type: text field. Unit of measure: kilometers/hour (miles/hour). The value of this item is the minimum design speed supported by the policy tables. The unit of measure for this item is kilometers/hour (miles/hour).
- **Runoff From Value** - Widget type: text field. Unit of measure: percent. This item is the from percent value of the length of superelevation runoff on the tangent. The unit of measure for this item is percent.
- **Runoff To Value** - Widget type: text field. Unit of measure: percent. This item is the percent value of the length of superelevation runoff on the tangent. The unit of measure for this item is percent.

- **Runoff Deviation** - Widget type: text field. Unit of measure: meters (feet). This item is the allowable deviation between the location of the spiral or curve and the location of the start of SE runoff. The unit of measure for this item is meters (feet).
- **Max CCR** - Widget type: text field. This item is the maximum compound curve ratio. It is the larger radius divided by the smaller radius.
- **Arterial Shoulder Width Cutoff** - Widget type: text field. Unit of measure: meters (feet). This item specifies a value used to implement the exception noted in note b, Exhibit 7-3, p. 452, AASHTO 2001. If the shoulder width is less than the policy value, but greater than the value of this item, a special warning message. The message is *Road value may vary from recommended values. Where volumes are low or a narrow section is needed to reduce construction impacts, the paved shoulder may be reduced to XX.* The unit of measure for this item is meters (feet).
- **Minimum Grade** - Widget type: text field. Unit of measure: percent. This item is the minimum acceptable longitudinal grade of highway. For drainage purposes, it is recommended that roads be at least on a slight grade. If adequate lateral drainage is provided, a grade flatter than the suggested minimum will be adequate. The unit of measure for this item is percent.
- **Max Allowable Speed Reduction** - Widget type: text field. Unit of measure: kilometers/hour (miles/hour). This item is the maximum speed reduction allowed for acceptable design. The unit of measure for this item is kilometers/hour (miles/hour).

  WSDOT uses 15 feet for its Max Allowable Speed Reduction.

- **SSD Driver's Eye Height** - Widget type: text field. Unit of measure: millimeters (inches). This item is the height of the driver's eye to use in stopping sight distance calculations. The unit of measure for this item is millimeters (inches).
- **SSD Object Height** - Widget type: text field. Unit of measure: millimeters (inches). This item is the object height used in stopping sight distance calculations. The unit of measure for this item is millimeters (inches).

  WSDOT uses 6 inches for its SSD Object Height.

- **SSD Back Up Distance** - Widget type: text field. Unit of measure: meters (feet). This item is the distance from VPC to back up before starting vertical stopping sight distance calculations. The unit of measure for this item is meters (feet).
- **SSD Vertical Cutoff** - Widget type: text field. Unit of measure: meters (feet). This item is the vertical sight distance upper threshold for stopping sight distance. The unit of measure for this item is meters (feet).
- **SSD Distance From Driver** - Widget type: text field. Unit of measure: meters (feet). This item is used in the SSD check. It is the distance from the driver to the object of interest. The unit of measure for this item is meters (feet).
- **SSD Driver's Eye Increment** - Widget type: text field. Unit of measure: meters (feet). This item is the increment to advance driver's eye location at which to check stopping sight distance. The unit of measure for this item is meters (feet).

- **SSD Increment** - Widget type: text field. Unit of measure: meters (feet). This item is the increment interval at which to check stopping sight distance. The unit of measure for this item is meters (feet).
- **PSD Driver's Eye Height** - Widget type: text field. Unit of measure: millimeters (inches). This item is the height of the driver's eye to use in passing sight distance calculations. The unit of measure for this item is millimeters (inches).
- **PSD Object Height** - Widget type: text field. Unit of measure: millimeters (inches). This item is the object height used in passing sight distance calculations. The unit of measure for this item is millimeters (inches).

  WSDOT uses 51 inches for its PSD Object Height.

- **PSD Back Up Distance** - Widget type: text field. Unit of measure: meters (feet). This item is the distance from VPC to back up before starting vertical passing sight distance calculations. The unit of measure for this item is meters (feet).
- **PSD Vertical Cutoff** - Widget type: text field. Unit of measure: meters (feet). This item is the vertical sight distance upper threshold for passing sight distance. The unit of measure for this item is meters (feet).
- **PSD Min Distance From Driver** - Widget type: text field. Unit of measure: meters (feet). This item is the starting distance from the driver used in the PSD check. The unit of measure for this item is meters (feet).
- **PSD Driver's Eye Increment** - Widget type: text field. Unit of measure: meters (feet). This item is the increment to advance driver's eye location at which to check passing sight distance. The unit of measure for this item is meters (feet).
- **PSD Increment** - Widget type: text field. Unit of measure: meters (feet). This item is the increment interval at which to check passing sight distance. The unit of measure for this item is meters (feet).
- **DSD Driver's Eye Height** - Widget type: text field. Unit of measure: millimeters (inches). This item is the height of the driver's eye to use decision sight distance in calculations. The unit of measure for this item is millimeters (inches).
- **DSD Object Height** - Widget type: text field. Unit of measure: millimeters (inches). This item is the object height used in decision sight distance calculations. The unit of measure for this item is millimeters (inches).

  WSDOT uses 6 inches for its DSD Object Height.

- **DSD Driver's Eye Increment** - Widget type: text field. Unit of measure: meters (feet). This item is the increment to advance driver's eye location at which to check decision sight distance. The unit of measure for this item is meters (feet).
- **ISD Driver's Eye Height** - Widget type: text field. Unit of measure: millimeters (inches). This item is the height of the driver's eye to use in intersection sight distance calculations. The unit of measure for this item is millimeters (inches).
- **ISD Eye Offset** - Widget type: text field. Unit of measure: meters (feet). . The unit of measure for this item is meters (feet).

- **ISD Object Height** - Widget type: text field. Unit of measure: millimeters (inches). This item is the height of the object used in intersection sight distance calculations. The unit of measure for this item is millimeters (inches).

  WSDOT uses 51 inches for its ISD Object Height.

- **Slope Cutoff** - Widget type: text field. Unit of measure: rise:run. This item is the slope cutoff. A slope steeper than this value is not checked in the Clear Zone and Roadside Slope element check. A slope steeper than this value will require a barrier. The presense of a barrier eliminates the need for the clear zone check. The unit of measure for this item is rise:run.
- **Cut Slope Maximum** - Widget type: text field. Unit of measure: rise:run. This item is the maximum acceptable value for a cut slope. The unit of measure for this item is rise:run.
- **Fill Slope Maximum** - Widget type: text field. Unit of measure: rise:run. This item is the maximum acceptable value for a fill slope. This item is used in the Clear Zone and Roadside Slope check. The unit of measure for this item is rise:run.
- **Minimum Clear Zone Curve Correction Radius** - Widget type: text field. Unit of measure: meters (feet). This item is the minimum clear zone curve correction radius. This item is used in the Clear Zone and Roadside Slope check. The unit of measure for this item is meters (feet).

  WSDOT uses “0” feet for its Min Clear Zone Curve Correction Radius.

- **Minimum Collector Clear Zone Curve Correction Speed** - Widget type: text field. Unit of measure: kilometers/hour (miles/hour). This item is the minimum design speed that may require clear zone corrections on outside of curves on collectors. Any collector road with design speed less than equal to this value requires no curve correction. This item is used in the Clear Zone and Roadside Slope check. The unit of measure for this item is kilometers/hour (miles/hour).
- **Maximum Offset Added To Lane Width Due To Curb.** - Widget type: text field. Unit of measure: meters (feet). This item is the maximum lane width offset necessitated by a curb. The offset is added to the lane width if the curb type is an intermittent barrier curb. The unit of measure for this item is meters (feet).
- **Minimum Offset Added To Lane Width Due To Curb.** - Widget type: text field. Unit of measure: meters (feet). This item is the minimum lane width offset necessitated by a curb. The offset is added to the lane width when the curb exists. The unit of measure for this item is meters (feet).
- **Allowable Leg Angle Delta** - Widget type: text field. Unit of measure: degrees. This item is the allowable leg angle delta from the perpendicular. The unit of measure for this item is degrees.

  WSDOT uses 30 degrees for its Allowable Leg Angle Delta.

- **Minimum Taper Tangent** - Widget type: text field. This item is a factor used to compute the minimum allowable tangent length that can be used to reference taper table items.

- **Maximum Taper Tangent** - Widget type: text field. This item is a factor used to compute the maximum allowable tangent length that can be used to reference taper table items.
- **Maximum Number of Legs** - Widget type: text field. This item is the maximum number of legs or approaches comprising an intersection allowed, without violating policy.

2.2.1.2 Traveled Way Width Tables Tab

The **`Traveled Way Width Tables`** tab includes the following sub-tabs: Traveled Way Width by ADT, Traveled Way Width by DHV, Curve Widening Table Row and Curve Widening Scale Factors. The Edit IHSDM Policy Tables Frame includes the tabs described in the following sections.

2.2.1.2.1 Traveled Way Width by ADT Tab

Figure 2 Traveled Way Width Tables/Traveled Way Width by ADT Tab

The **`Traveled Way Width by ADT`** tab includes the following widgets: Traveled Way Width by ADT.

- **Traveled Way Width by ADT** List Box - Widget type: list box. This item is the traveled way width by ADT. This table is the Traveled Way Width by Average Daily Traffic table data from AASHTO 1994 Table V-6, Table VI-4 and Table VII-2. This table is used by the Traveled Way Width policy check. The **`Traveled Way Width by ADT`** list box includes the following items: Functional Class, Terrain, Design Speed, ADT To Value, Policy Traveled Way Width and ADT From Value.
    - **Functional Class** Item - This combo box determines the functional classification of a highway. The functional classification of a highway describes the character of service it is intended to provide. The enumeration values are: **`arterial`**, **`collector`** and **`local`**.
    - **Terrain** Item - This combo box determines the highway terrain. Terrain classifications pertain to the general character of topography of the the land traversed by the highway. The enumeration values are: **`level`**, **`rolling`**, **`mountainous`** and **`null`**.
    - **Design Speed** Item - Unit of measure: kilometers/hour (miles/hour). The value of this item is the design speed for the highway. The 2001 AASHTO policy defines design speed as a selected value used to determine the various geometric design features of the highway. The unit of measure for this item is kilometers/hour (miles/hour).
    - **ADT To Value** Item - Unit of measure: vehicles/day. This item is the value from the ADT bounds lookup table. The unit of measure for this item is vehicles/day.
    - **Policy Traveled Way Width** Item - Unit of measure: meters (feet). This item is the width of travel lanes from the lookup table. The unit of measure for this item is meters (feet).

      WSDOT uses 24 feet for its Policy Traveled Way Width.

    - **ADT From Value** Item - Unit of measure: vehicles/day. This item is from the value of the ADT bounds lookup table. The unit of measure for this item is vehicles/day.

2.2.1.2.2 Traveled Way Width by DHV Tab

Figure 3 Traveled Way Width Tables/Traveled Way Width by DHV Tab

The `Traveled Way Width by DHV` tab includes the following widgets: Traveled Way Width by DHV.

- **Traveled Way Width by DHV** List Box - Widget type: list box. This table is the Traveled Way Width by Design Hour Volume table data from AASHTO 1994 Table VII-2. This table is used by the Traveled Way Width policy check. The `Traveled Way Width by DHV` list box includes the following items: Design Speed, Functional Class, Design Hourly Volume and Policy Traveled Way Width.
    - **Design Speed** Item - Unit of measure: kilometers/hour (miles/hour). The value of this item is the design speed for the highway. The 2001 AASHTO policy defines design speed as a selected value used to determine the various geometric design features of the highway. The unit of measure for this item is kilometers/hour (miles/hour).
    - **Functional Class** Item - This combo box determines the functional classification of a highway. The functional classification of a highway describes the character of service it is intended to provide. The enumeration values are: `arterial`, `collector` and `local`.

- **Design Hourly Volume** Item - Unit of measure: vehicles/hour. The value of this item is the design hourly volume (DHV). On two-lane rural highways, the DHV is the total traffic in both directions of travel. The unit of measure for this item is vehicles/hour.
- **Policy Traveled Way Width** Item - Unit of measure: meters (feet). This item is the width of travel lanes from the lookup table. The unit of measure for this item is meters (feet).

2.2.1.2.3 Curve Widening Table Row Tab

Figure 4 Traveled Way Width Tables/Curve Widening Table Row Tab

The `Curve Widening Table Row` tab includes the following widgets: Curve Widening Table Row.

- **Curve Widening Table Row** List Box - Widget type: list box. This table is the curve widening table data from AASHTO 1994 Table III-22. This table is used by the Traveled Way Width policy check. Travel lanes are often

widened in curves to provide more room for vehicle maneuvering. The **`Curve Widening Table Row`** list box includes the following items: Traveled Way Width, Curve Radius, Design Speed and Curve Widening Value.

- **Traveled Way Width** Item - Unit of measure: meters (feet). This item is the traveled way width. It is the portion of the highway for the movement of vehicles exclusive of shoulders (auxiliary lane width is NOT included). The unit of measure for this item is meters (feet).

  WSDOT uses 24 feet for its Traveled Way Width.

- **Curve Radius** Item - Unit of measure: meters (feet). The value of this item is the radius of curvature. Choice of curve radii is related to design speed, maximum superelevation rates, and location (rural or urban). The unit of measure for this item is meters (feet).
- **Design Speed** Item - Unit of measure: kilometers/hour (miles/hour). The value of this item is the design speed for the highway. The 2001 AASHTO policy defines design speed as a selected value used to determine the various geometric design features of the highway. The unit of measure for this item is kilometers/hour (miles/hour).
- **Curve Widening Value** Item - Unit of measure: meters (feet). This item is the traveled way widening on curve value. The unit of measure for this item is meters (feet).

2.2.1.2.4 Curve Widening Scale Factors Tab

Figure 5 Traveled Way Width Tables/Curve Widening Scale Factors Tab

The `Curve Widening Scale Factors` tab includes the following widgets: Curve Widening Scale Factors.

- **Curve Widening Scale Factors** List Box - Widget type: list box. This table is used in the Traveled Way Width policy check. The table represents the notes in AASHTO 1994, Table III-22. The `Curve Widening Scale Factors` list box includes the following items: Design Vehicle, To Radius, From Radius and Curve Widening Scale Factor.
    - **Design Vehicle** Item - This combo box determines the vehicles typical in this design. A value must be specified for this item.
    - **To Radius** Item - Unit of measure: meters (feet). This item is to radius. The unit of measure for this item is meters (feet).
    - **From Radius** Item - Unit of measure: meters (feet). This item is from radius. The unit of measure for this item is meters (feet).

- **Curve Widening Scale Factor** Item - Unit of measure: meters (feet). This item is the curve widening scale factor. AASHTO provides this scale factor for additional widening for larger design vehicles. The unit of measure for this item is meters (feet).

  WSDOT uses 0 feet for its Curve Widening Scale Factor.

2.2.1.3 Table: Design Vehicle Dimensions Tab

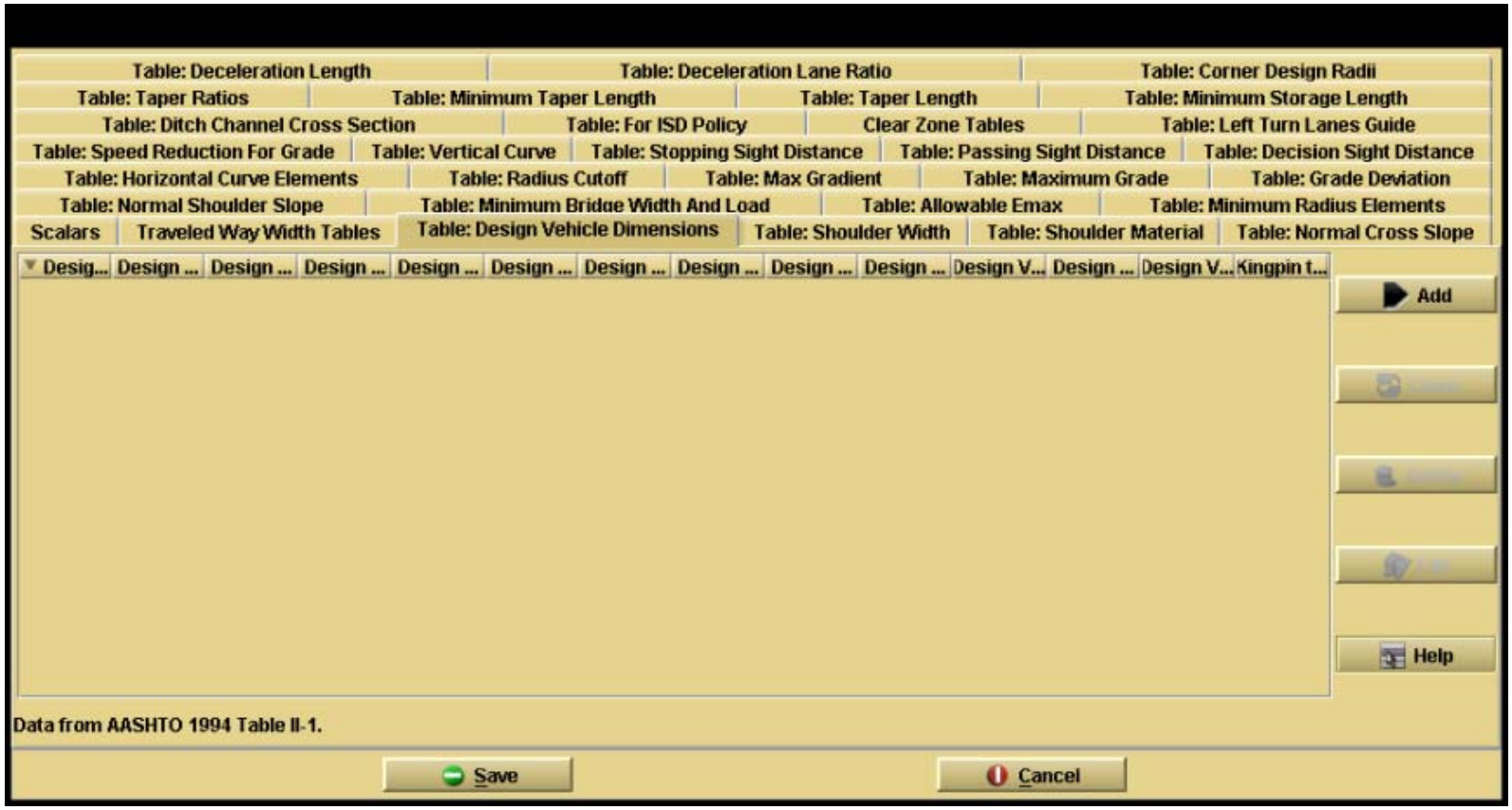

Figure 6 Table: Design Vehicle Dimensions Tab

The `Table: Design Vehicle Dimensions` tab includes the following widgets: Row: Design Vehicle Dimensions.

- **Row: Design Vehicle Dimensions** List Box - Widget type: list box. This table is the Design vehicle dimensions lookup table data from AASHTO 1994 Table II-1. The `Row: Design Vehicle Dimensions` list box includes the following items: Design Vehicle, Design Vehicle Type, Design Vehicle Height, Design Vehicle Width, Design

Vehicle Length, Design Vehicle Front Overhang, Design Vehicle Rear Overhang, Design Vehicle Wheel Base 1, Design Vehicle Wheel Base 2, Design Vehicle Rear Axle To Hitch Point, Design Vehicle Hitch Point To Next Axle, Design Vehicle Wheel Base 3, Design Vehicle Wheel Base 4 and Kingpin to Rear Axle.

- **Design Vehicle** Item - This combo box determines the vehicles typical in this design. A value must be specified for this item.

  WSDOT uses WB-65 for its Rural 2-Lane Design Vehicle Dimensions.

- **Design Vehicle Type** Item - This item is the type of design vehicle. A value must be specified for this item.
- **Design Vehicle Height** Item - Unit of measure: meters (feet). This item is the design vehicle height. The unit of measure for this item is meters (feet).
- **Design Vehicle Width** Item - Unit of measure: meters (feet). This item is the design vehicle width. The unit of measure for this item is meters (feet).
- **Design Vehicle Length** Item - Unit of measure: meters (feet). This item is the design vehicle length. The unit of measure for this item is meters (feet).
- **Design Vehicle Front Overhang** Item - Unit of measure: meters (feet). This item is the design vehicle front overhang. The unit of measure for this item is meters (feet).
- **Design Vehicle Rear Overhang** Item - Unit of measure: meters (feet). This item is the design vehicle rear overhang. The unit of measure for this item is meters (feet).
- **Design Vehicle Wheel Base 1** Item - Unit of measure: meters (feet). This item is the design vehicle wheel base 1. The unit of measure for this item is meters (feet).
- **Design Vehicle Wheel Base 2** Item - Unit of measure: meters (feet). This item is the design vehicle wheel base 2. No value needs to be specified for this item. The unit of measure for this item is meters (feet).
- **Design Vehicle Rear Axle To Hitch Point** Item - Unit of measure: meters (feet). This item is the design vehicle distance from rear effective axle to hitch point. No value needs to be specified for this item. The unit of measure for this item is meters (feet).
- **Design Vehicle Hitch Point To Next Axle** Item - Unit of measure: meters (feet). This item is the design vehicle distance from hitch point to the lead effective axle of the following unit. No value needs to be specified for this item. The unit of measure for this item is meters (feet).
- **Design Vehicle Wheel Base 3** Item - Unit of measure: meters (feet). This item is the design vehicle wheel base 3. No value needs to be specified for this item. The unit of measure for this item is meters (feet).
- **Design Vehicle Wheel Base 4** Item - Unit of measure: meters (feet). This item is the design vehicle wheel base 4. No value needs to be specified for this item. The unit of measure for this item is meters (feet).
- **Kingpin to Rear Axle** Item - Unit of measure: meters (feet). The value of this item is the typical length from the kingpin to the center of the rear axle. Is item is found in the AASHTO 2001 policy but not 1990/1994. No value needs to be specified for this item. The unit of measure for this item is meters (feet).

2.2.1.4 Table: Shoulder Width Tab

The **`Table: Shoulder Width`** tab includes the following sub-tabs: Row: Shoulder Width Lookup Table Elements, Row: Shoulder Width By DHV and Adjusted Shoulder Width Lookup Table. The Edit IHSDM Policy Tables Frame includes the tabs described in the following sections.

2.2.1.4.1 Row: Shoulder Width Lookup Table Elements Tab

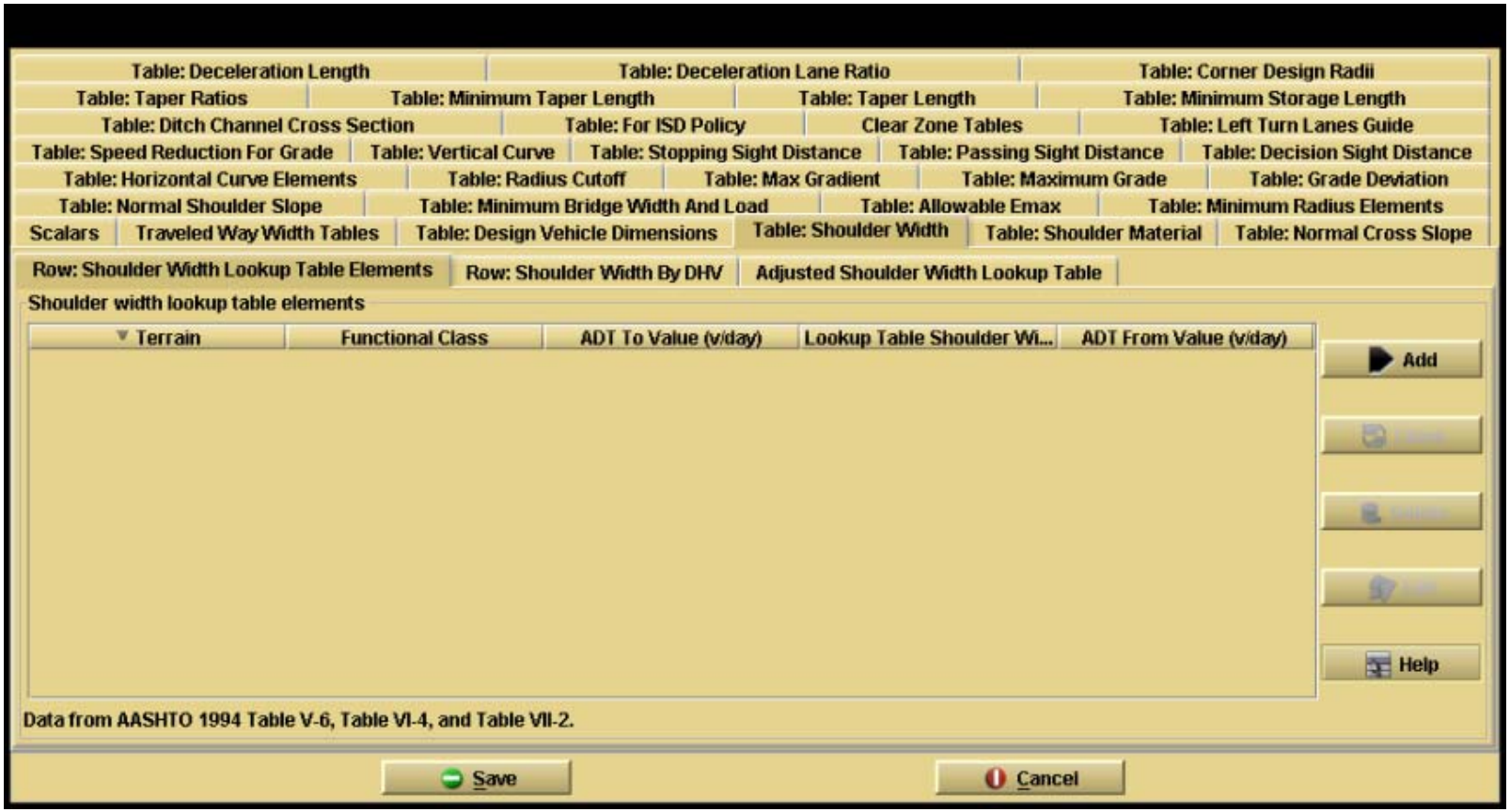

Figure 7 Table: Shoulder Width/Row: Shoulder Width Lookup Table Elements Tab

The **`Row: Shoulder Width Lookup Table Elements`** tab includes the following widgets: Row: Shoulder Width Lookup Table Elements.

- **Row: Shoulder Width Lookup Table Elements** List Box - Widget type: list box. This table is the shoulder width lookup table data from AASHTO 1994 Table V-6, Table VI-4, and Table VII-2. The **`Row: Shoulder Width Lookup Table Elements`** list box includes the following items: Terrain, Functional Class, ADT To Value, Lookup Table Shoulder Width and ADT From Value.

- **Terrain** Item - This combo box determines the highway terrain. Terrain classifications pertain to the general character of topography of the the land traversed by the highway. The enumeration values are: `level`, `rolling`, `mountainous` and `null`.
- **Functional Class** Item - This combo box determines the functional classification of a highway. The functional classification of a highway describes the character of service it is intended to provide. The enumeration values are: `arterial`, `collector` and `local`.
- **ADT To Value** Item - Unit of measure: vehicles/day. This item is the value from the ADT bounds lookup table. The unit of measure for this item is vehicles/day.
- **Lookup Table Shoulder Width** Item - Unit of measure: meters (feet). This item is the width of the shoulder from the lookup table. The unit of measure for this item is meters (feet).

  WSDOT uses 4 feet Shoulder Width for its Collector roads with a ADT of 2000 v/day.

- **ADT From Value** Item - Unit of measure: vehicles/day. This item is from the value of the ADT bounds lookup table. The unit of measure for this item is vehicles/day.

2.2.1.4.2 Row: Shoulder Width By DHV Tab

Figure 8 Table: Shoulder Width/Row: Shoulder Width By DHV Tab

The `Row: Shoulder Width By DHV` tab includes the following widgets: Row: Shoulder Width By DHV.

- **Row: Shoulder Width By DHV** List Box - Widget type: list box. This table is the usable shoulder width using design hour volume lookup table data from AASHTO 1994 Table VII-2. The `Row: Shoulder Width By DHV` list box includes the following items: Functional Class, Design Hourly Volume and Lookup Table Shoulder Width.
    - **Functional Class** Item - This combo box determines the functional classification of a highway. The functional classification of a highway describes the character of service it is intended to provide. The enumeration values are: `arterial`, `collector` and `local`.
    - **Design Hourly Volume** Item - Unit of measure: vehicles/hour. The value of this item is the design hourly volume (DHV). On two-lane rural highways, the DHV is the total traffic in both directions of travel. The unit of measure for this item is vehicles/hour.
    - **Lookup Table Shoulder Width** Item - Unit of measure: meters (feet). This item is the width of the shoulder from the lookup table. The unit of measure for this item is meters (feet).

2.2.1.4.3 Adjusted Shoulder Width Lookup Table Tab

Figure 9 Table: Shoulder Width/Adjusted Shoulder Width Lookup Table Tab

The `Adjusted Shoulder Width Lookup Table` tab includes the following widgets: Adjusted Shoulder Width Lookup Table.

- **Adjusted Shoulder Width Lookup Table** List Box - Widget type: list box. This item is the adjusted shoulder width lookup table row. The `Adjusted Shoulder Width Lookup Table` list box includes the following items: Functional Class, ADT To Value, Design Speed and Total Width.
  - **Functional Class** Item - This combo box determines the functional classification of a highway. The functional classification of a highway describes the character of service it is intended to provide. The enumeration values are: `arterial`, `collector` and `local`.
  - **ADT To Value** Item - Unit of measure: vehicles/day. This item is the value from the ADT bounds lookup table. The unit of measure for this item is vehicles/day.

- **Design Speed** Item - Unit of measure: kilometers/hour (miles/hour). The value of this item is the design speed for the highway. The 2001 AASHTO policy defines design speed as a selected value used to determine the various geometric design features of the highway. The unit of measure for this item is kilometers/hour (miles/hour).
- **Total Width** Item - Unit of measure: meters (feet). This item is the width of the thru lane plus shoulder. The unit of measure for this item is meters (feet).

2.2.1.5 Table: Shoulder Material Tab

Figure 10 Table: Shoulder Material Tab

The `Table: Shoulder Material` tab includes the following widgets: Row: Shoulder Material Table.

- **Row: Shoulder Material Table** List Box - Widget type: list box. This table is the shoulder material lookup table data from AASHTO 1994 Table VII-2, and PRM ST pg. 2. The `Row: Shoulder Material Table` list box includes the following items: Functional Class, Bike Facility and Type of Shoulder Material.
    - **Functional Class** Item - This combo box determines the functional classification of a highway. The functional classification of a highway describes the character of service it is intended to provide. The enumeration values are: `arterial`, `collector` and `local`.
    - **Bike Facility** Item - . The enumeration values are:
        - `yes` (bike facility exists) and
        - `no` (bike facility does not exist).
    - **Type of Shoulder Material** Item - This combo box determines the type of shoulder material. The enumeration values are: `turf`, `gravel`, `paved` and `composite`.

2.2.1.6 Table: Normal Cross Slope Tab

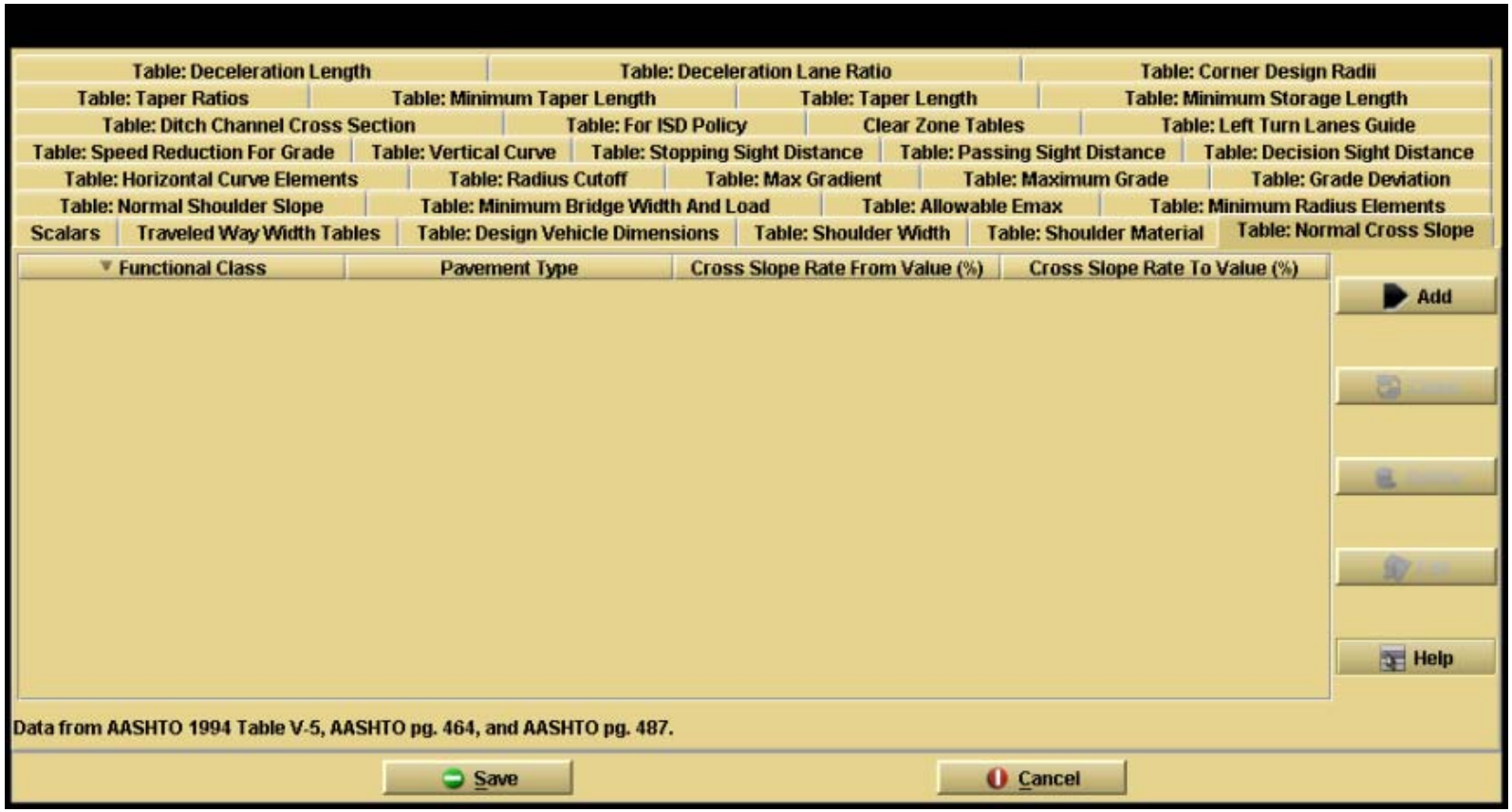

Figure 11 Table: Normal Cross Slope Tab

The `Table: Normal Cross Slope` tab includes the following widgets: Row: Normal Cross Slope Table.

- **Row: Normal Cross Slope Table** List Box - Widget type: list box. This table is the range of acceptable cross slopes based on pavement type (only need this for local roads since they may have high-, intermediate-, or low-type pavements)lookup table data from AASHTO 1994 Table V-5, AASHTO pg. 464, and AASHTO pg. 487. The `Row: Normal Cross Slope Table` list box includes the following items: Functional Class, Pavement Type, Cross Slope Rate From Value and Cross Slope Rate To Value.
    - **Functional Class** Item - This combo box determines the functional classification of a highway. The functional classification of a highway describes the character of service it is intended to provide. The enumeration values are: `arterial`, `collector` and `local`.
    - **Pavement Type** Item - This combo box determines the pavement type. Pavements are categorized as high, intermediate, and low. The enumeration values are: `high-type`, `intermediate-type` and `low-type`.
    - **Cross Slope Rate From Value** Item - Unit of measure: %. This item is the lookup table cross slope rate from value. Range of acceptable cross slopes - based on pavement type (only need this for local roads since they may have high-, intermediate-, or low-type pavements). The unit of measure for this item is %.

      WSDOT uses 2 percent for arterials with high and low pavement type.

    - **Cross Slope Rate To Value** Item - Unit of measure: %. This item is the lookup table cross slope rate to value. Range of acceptable cross slopes - based on pavement type (only need this for local roads since they may have high-, intermediate-, or low-type pavements). The unit of measure for this item is %.

      WSDOT uses 2.5 and 3 percent respectively for arterials with high and low pavement type.

2.2.1.7 Table: Normal Shoulder Slope Tab

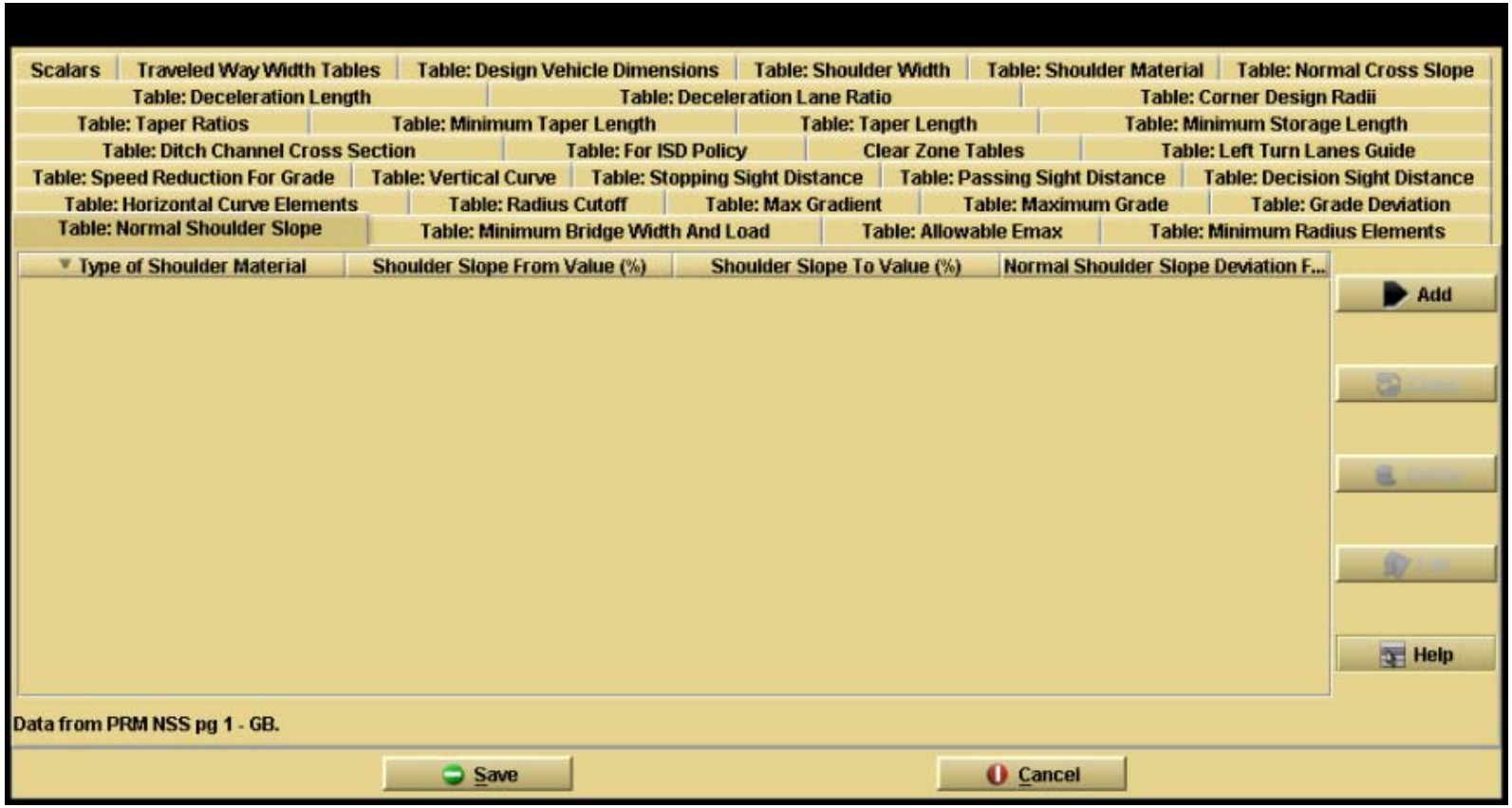

Figure 12 Table: Normal Shoulder Slope Tab

The `Table: Normal Shoulder Slope` tab includes the following widgets: Row: Normal Shoulder Slope Table.

- **Row: Normal Shoulder Slope Table** List Box - Widget type: list box. This table is the normal shoulder slope lookup table data from PRM NSS pg 1 - GB. The `Row: Normal Shoulder Slope Table` list box includes the following items: Type of Shoulder Material, Shoulder Slope From Value, Shoulder Slope To Value and Normal Shoulder Slope Deviation Factor.
  - **Type of Shoulder Material** Item - This combo box determines the type of shoulder material. The enumeration values are: `turf`, `gravel`, `paved` and `composite`.
  - **Shoulder Slope From Value** Item - Unit of measure: %. This item is the lookup table shoulder slope from value. The unit of measure for this item is %.
  - **Shoulder Slope To Value** Item - Unit of measure: %. This item is the lookup table shoulder slope to value. The unit of measure for this item is %.

- **Normal Shoulder Slope Deviation Factor** Item - Unit of measure: %. This item is the normal shoulder slope deviation factor. The unit of measure for this item is %.

2.2.1.8 Table: Minimum Bridge Width And Load Tab

The **`Table: Minimum Bridge Width And Load`** tab includes the following sub-tabs: Row: Minimum Bridge Width And Load and Row: Minimum Bridge Width And Load. The Edit IHSDM Policy Tables Frame includes the tabs described in the following sections.

2.2.1.8.1 Row: Minimum Bridge Width And Load Tab

Figure 13 Table: Minimum Bridge Width And Load/Row: Minimum Bridge Width And Load Tab

The **`Row: Minimum Bridge Width And Load`** tab includes the following widgets: Row: Minimum Bridge Width And Load.

- **Row: Minimum Bridge Width And Load** List Box - Widget type: list box. This table is the minimum clear highway widths and design loadings for bridges lookup table data from AASHTO 1994 Table V-7, V-8, VI-5, and VI-6. The **`Row: Minimum Bridge Width And Load`** list box includes the following items: Type of Bridge Project, Functional Class, Bike Facility, Bridge Length Cutoff, Number of Thru Lanes, Average Daily Traffic, Minimum Width For Bridge, Additional Width For Bridge, Structural Capacity and Specified the Type of Width Value.
    - **Type of Bridge Project** Item - This combo box determines the type of project or study for bridges. Policy Guidance varies for new and reconstructed bridges and for bridge to remain in place. The enumeration values are: **`new/reconstruction`** and **`existing will remain`**.
    - **Functional Class** Item - This combo box determines the functional classification of a highway. The functional classification of a highway describes the character of service it is intended to provide. The enumeration values are: **`arterial`**, **`collector`** and **`local`**.
    - **Bike Facility** Item - . The enumeration values are:
        - **`yes`** (bike facility exists) and
        - **`no`** (bike facility does not exist).
    - **Bridge Length Cutoff** Item - Unit of measure: meters (feet). This item is the bridge length after which this table does not apply. The unit of measure for this item is meters (feet).
    - **Number of Thru Lanes** Item - .
    - **Average Daily Traffic** Item - Unit of measure: vehicles/day. The value of this item is the average daily traffic (ADT). The unit of measure for this item is vehicles/day.
    - **Minimum Width For Bridge** Item - Unit of measure: meters (feet). This item is the minimum width for a bridge. The unit of measure for this item is meters (feet).
    - **Additional Width For Bridge** Item - Unit of measure: meters (feet). This item is the additional width for a bridge. The unit of measure for this item is meters (feet).
    - **Structural Capacity** Item - This item is the design loading structural capacity.
    - **Specified the Type of Width Value** Item - This item specifies the type of width value. 'VALUE' means minWidth is policy value, 'TWW' means traveled way width is policy value, 'RW' means highway is policy value. The enumeration values are:
        - **`VALUE`** (specified value is policy value),
        - **`TWW`** (traveled way width is policy value),
        - **`RW`** (highway width is policy value) and
        - **`NP`** (no policy value).

2.2.1.8.2 Row: Minimum Bridge Width And Load Tab

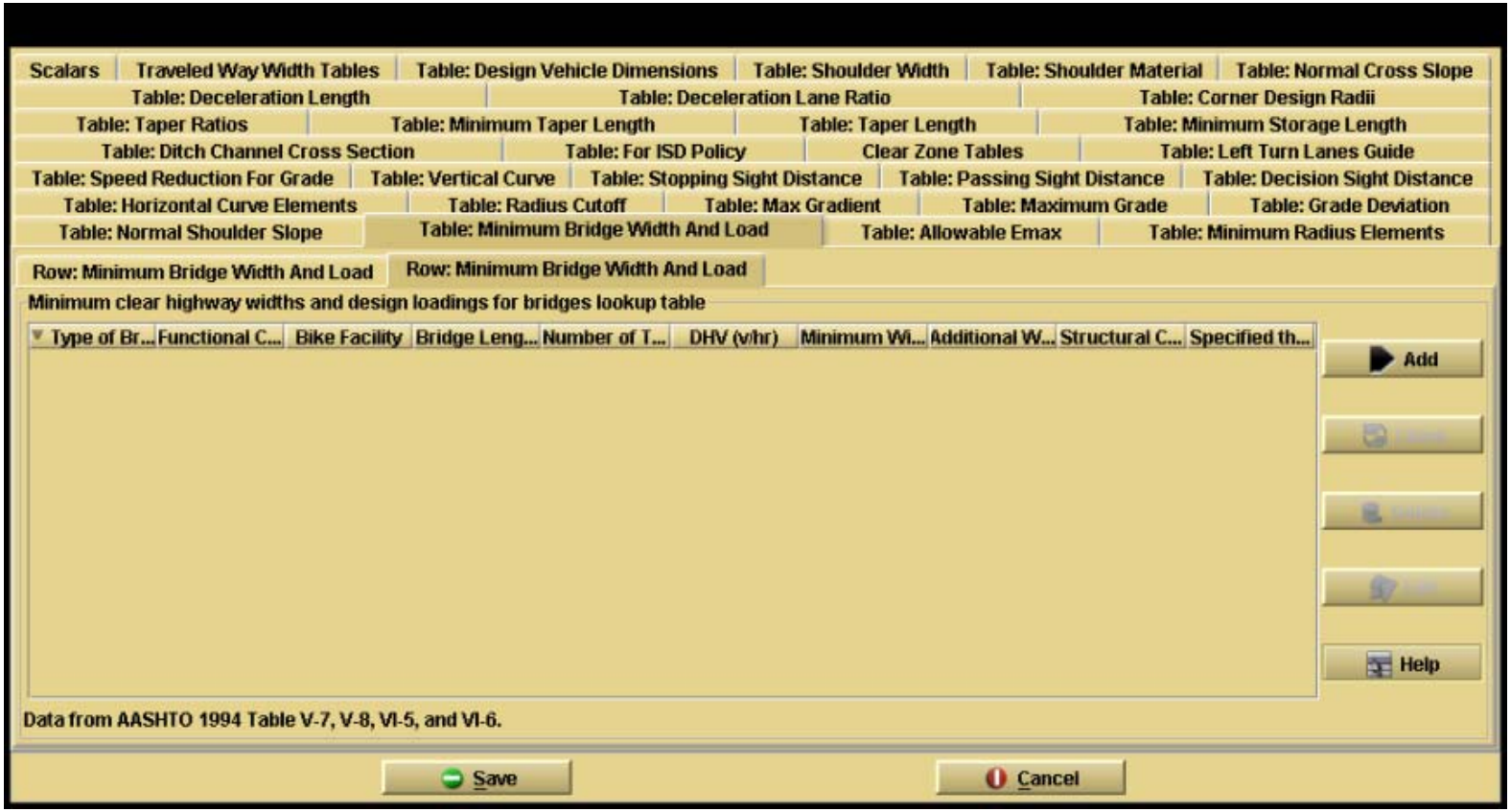

Figure 14 Table: Minimum Bridge Width And Load/Row: Minimum Bridge Width And Load Tab

The `Row: Minimum Bridge Width And Load` tab includes the following widgets: Row: Minimum Bridge Width And Load.

- **Row: Minimum Bridge Width And Load** List Box - Widget type: list box. This table is the minimum clear highway widths and design loadings for bridges lookup table data from AASHTO 1994 Table V-7, V-8, VI-5, and VI-6. The `Row: Minimum Bridge Width And Load` list box includes the following items: Type of Bridge Project, Functional Class, Bike Facility, Bridge Length Cutoff, Number of Thru Lanes, Average Daily Traffic, Minimum Width For Bridge, Additional Width For Bridge, Structural Capacity and Specified the Type of Width Value.
  - **Type of Bridge Project** Item - This combo box determines the type of project or study for bridges. Policy Guidance varies for new and reconstructed bridges and for bridge to remain in place. The enumeration values are: `new/reconstruction` and `existing will remain`.
  - **Functional Class** Item - This combo box determines the functional classification of a highway. The functional classification of a highway describes the character of service it is intended to provide. The enumeration values are: `arterial`, `collector` and `local`.

- **Bike Facility** Item - . The enumeration values are:
  - **`yes`** (bike facility exists) and
  - **`no`** (bike facility does not exist).
- **Bridge Length Cutoff** Item - Unit of measure: meters (feet). This item is the bridge length after which this table does not apply. The unit of measure for this item is meters (feet).
- **Number of Thru Lanes** Item - .
- **Design Hourly Volume** Item - Unit of measure: vehicles/hour. The value of this item is the design hourly volume (DHV). On two-lane rural highways, the DHV is the total traffic in both directions of travel. The unit of measure for this item is vehicles/hour.
- **Minimum Width For Bridge** Item - Unit of measure: meters (feet). This item is the minimum width for a bridge. The unit of measure for this item is meters (feet).
- **Additional Width For Bridge** Item - Unit of measure: meters (feet). This item is the additional width for a bridge. The unit of measure for this item is meters (feet).
- **Structural Capacity** Item - This item is the design loading structural capacity.
- **Specified the Type of Width Value** Item - This item specifies the type of width value. 'VALUE' means minWidth is policy value, 'TWW' means traveled way width is policy value, 'RW' means highway is policy value. The enumeration values are:
  - **`VALUE`** (specified value is policy value),
  - **`TWW`** (traveled way width is policy value),
  - **`RW`** (highway width is policy value) and
  - **`NP`** (no policy value).

2.2.1.9 Table: Allowable Emax Tab

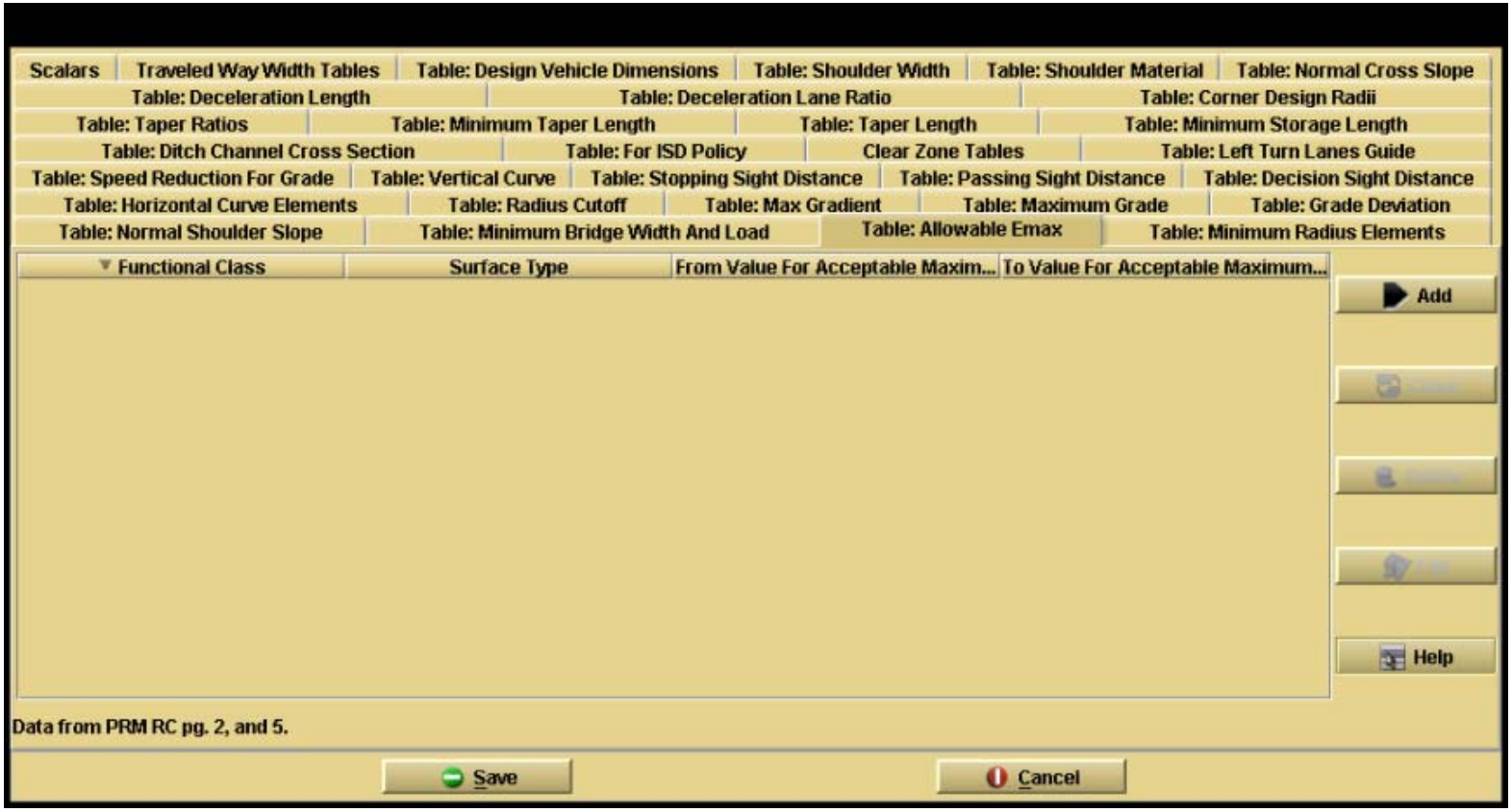

Figure 15 Table: Allowable Emax Tab

The `Table: Allowable Emax` tab includes the following widgets: Row: Allowable Emax Table.

- **Row: Allowable Emax Table** List Box - Widget type: list box. This table is the acceptable values for maximum superelevation rates lookup table data from PRM RC pg. 2, and 5. The `Row: Allowable Emax Table` list box includes the following items: Functional Class, Surface Type, From Value For Acceptable Maximum Superelevation and To Value For Acceptable Maximum Superelevation.
    - **Functional Class** Item - This combo box determines the functional classification of a highway. The functional classification of a highway describes the character of service it is intended to provide. The enumeration values are: `arterial`, `collector` and `local`.
    - **Surface Type** Item - This combo box determines the surface type. The enumeration values are: `paved` and `aggregate`.
    - **From Value For Acceptable Maximum Superelevation** Item - Unit of measure: percent. This item is the lower value in the maximum superelevation range. The unit of measure for this item is percent.

WSDOT uses 6 percent for its From Value for Acceptable Maximum Superelevation.

- **To Value For Acceptable Maximum Superelevation** Item - Unit of measure: percent. This item is the upper value in the maximum superelevation range. The unit of measure for this item is percent.

WSDOT uses 10 percent for its To Value for Acceptable Maximum Superelevation.

2.2.1.10 Table: Minimum Radius Elements Tab

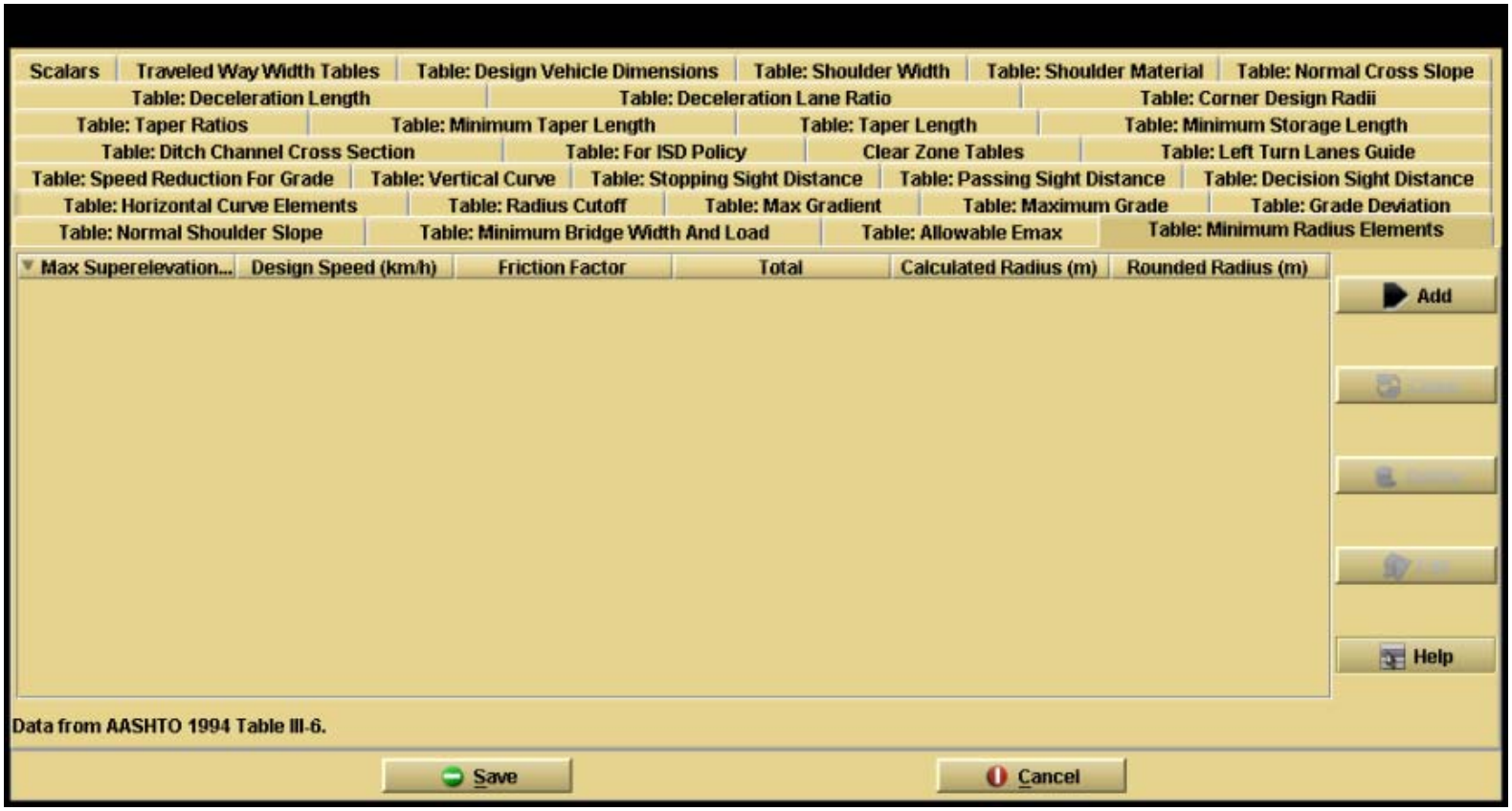

Figure 16 Table: Minimum Radius Elements Tab

The `Table: Minimum Radius Elements` tab includes the following widgets: Row: Minimum Radius Elements.

- **Row: Minimum Radius Elements** List Box - Widget type: list box. This table is the minimum radius using limiting values of e and f lookup table data from AASHTO 1994 Table III-6. The `Row: Minimum Radius Elements` list box

includes the following items: Max Superelevation, Design Speed, Friction Factor, Total, Calculated Radius and Rounded Radius.

- **Max Superelevation** Item - Unit of measure: percent. The value of this item is the maximum superelevation for design purposes. Superelevation rates are determined using the design maximum superelevation rate. This maximum rate would be used for the sharpest curve recommended (shortest radius) for a given design speed. Maximum Superelevation should be entered as a percentage (%). The unit of measure for this item is percent.
- **Design Speed** Item - Unit of measure: kilometers/hour (miles/hour). The value of this item is the design speed for the highway. The 2001 AASHTO policy defines design speed as a selected value used to determine the various geometric design features of the highway. The unit of measure for this item is kilometers/hour (miles/hour).
- **Friction Factor** Item - This item is the side friction factor. No value needs to be specified for this item.
- **Total** Item - This item is the total (e/100 + f).
- **Calculated Radius** Item - Unit of measure: meters (feet). This item is the calculated radius. The unit of measure for this item is meters (feet).
- **Rounded Radius** Item - Unit of measure: meters (feet). This item is the rounded radius. The unit of measure for this item is meters (feet).

2.2.1.11 Table: Horizontal Curve Elements Tab

The **`Table: Horizontal Curve Elements`** tab includes the following sub-tabs: Row: Horizontal Curve Elements and Row: Horizontal Curve Length Elements. The Edit IHSDM Policy Tables Frame includes the tabs described in the following sections.

2.2.1.11.1 Row: Horizontal Curve Elements Tab

Figure 17 Table: Horizontal Curve Elements/Row: Horizontal Curve Elements Tab

The `Row: Horizontal Curve Elements` tab includes the following widgets: Row: Horizontal Curve Elements.

- **Row: Horizontal Curve Elements** List Box - Widget type: list box. This table is the design elements related to design speed and horizontal curvature lookup table data from AASHTO 1994 Table III-7 thru III-11. The `Row: Horizontal Curve Elements` list box includes the following items: Max Superelevation, Design Speed, Curve Radius, E Flag, E%, Min Runoff (2 Lns) and Min Runoff (4 Lns).
    - **Max Superelevation** Item - Unit of measure: percent. The value of this item is the maximum superelevation for design purposes. Superelevation rates are determined using the design maximum superelevation rate. This maximum rate would be used for the sharpest curve recommended (shortest radius) for a given design speed. Maximum Superelevation should be entered as a percentage (%). The unit of measure for this item is percent.
    - **Design Speed** Item - Unit of measure: kilometers/hour (miles/hour). The value of this item is the design speed for the highway. The 2001 AASHTO policy defines design speed as a selected value used to determine the

various geometric design features of the highway. The unit of measure for this item is kilometers/hour (miles/hour).

- **Curve Radius** Item - Unit of measure: meters (feet). The value of this item is the radius of curvature. Choice of curve radii is related to design speed, maximum superelevation rates, and location (rural or urban). The unit of measure for this item is meters (feet).
- **E Flag** Item - This item is the superelevation flag. NC signifies normal crown section, RC signifies remove adverse crown, and VALUE signifies to use the table (eRate) value. The enumeration values are: **VALUE**, **RC** and **NC**.
- **E%** Item - This item is the rate of superelevation. Values can be: a numeric percent, normal crown or remove adverse crown, or superelevate.
- **Min Runoff (2 Lns)** Item - Unit of measure: meters (feet). This item is the minimum length of runoff, 2 lanes. Runoff does not include tangent runout. The unit of measure for this item is meters (feet).
- **Min Runoff (4 Lns)** Item - Unit of measure: meters (feet). This item is the minimum length of runoff, 4 lanes. Runoff does not include tangent runout. The unit of measure for this item is meters (feet).

2.2.1.11.2 Row: Horizontal Curve Length Elements Tab

Figure 18 Table: Horizontal Curve Elements/Row: Horizontal Curve Length Elements Tab

The `Row: Horizontal Curve Length Elements` tab includes the following widgets: Row: Horizontal Curve Length Elements.

- **Row: Horizontal Curve Length Elements** List Box - Widget type: list box. This table is the design elements related to length of horizontal curves lookup table data. The `Row: Horizontal Curve Length Elements` list box includes the following items: Functional Class, Speed Factor, Length Factor, Angle Cutoff and Length Angle Factor.
  - **Functional Class** Item - This combo box determines the functional classification of a highway. The functional classification of a highway describes the character of service it is intended to provide. The enumeration values are: `arterial`, `collector` and `local`.
  - **Speed Factor** Item - Unit of measure: SPEED_FACTOR. This item is the speed factor. This value is multiplied by the speed (in km/hr) to yield the minimum horizontal curve length for arterials.
  - **Length Factor** Item - Unit of measure: meters (feet). This item is the length factor. This value is the minimum horizontal curve length. The unit of measure for this item is meters (feet).

- **Angle Cutoff** Item - Unit of measure: degrees. This item is the angle cutoff. This value is the minimum central angle for horizontal curves. The unit of measure for this item is degrees.
- **Length Angle Factor** Item - Unit of measure: meters (feet). This item is the addition length per degree for central angles greater than the angle cutoff. The unit of measure for this item is meters (feet).

2.2.1.12 Table: Radius Cutoff Tab

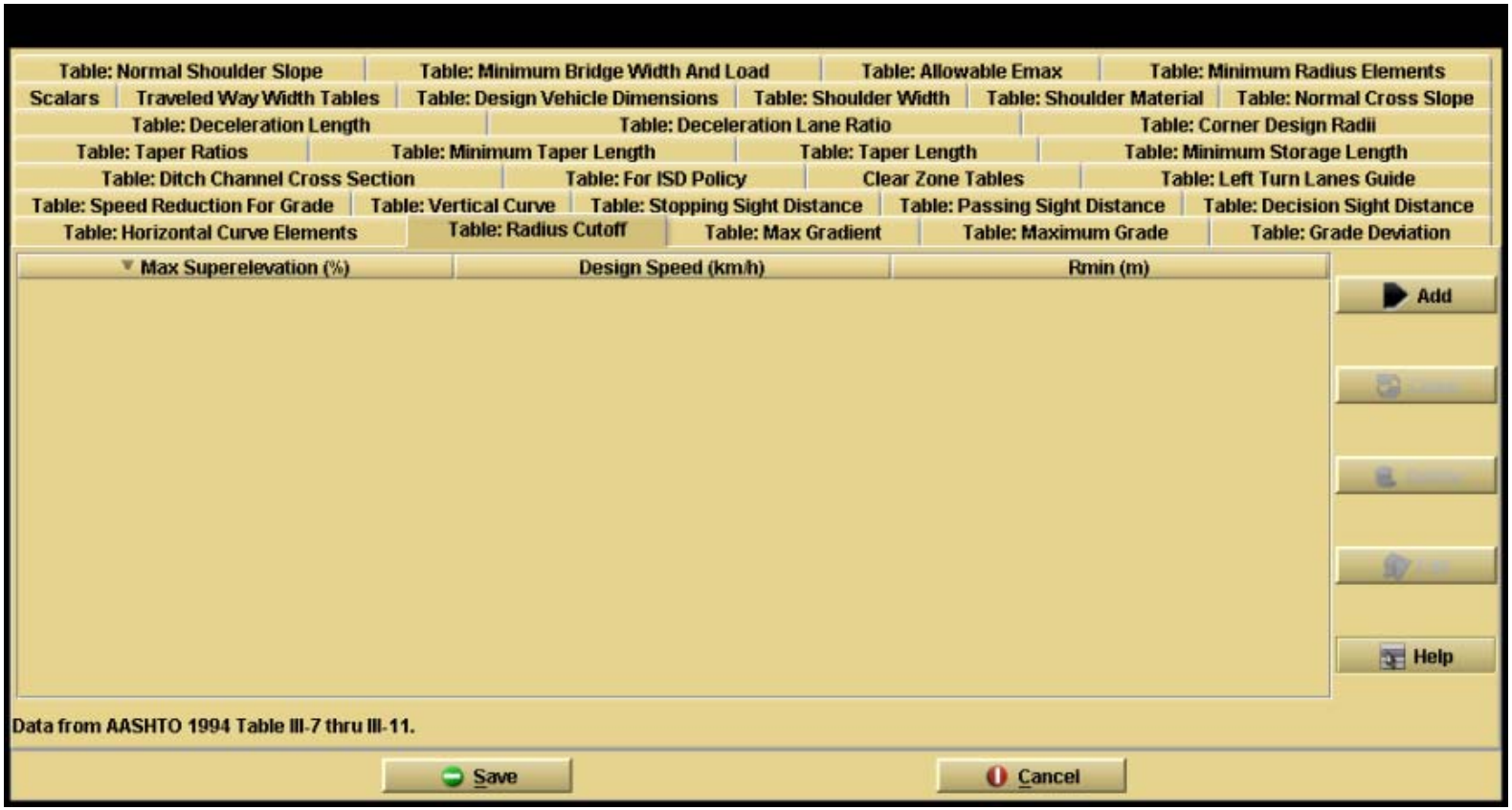

Figure 19 Table: Radius Cutoff Tab

The `Table: Radius Cutoff` tab includes the following widgets: Row: Radius Cutoff Table.

- **Row: Radius Cutoff Table** List Box - Widget type: list box. This table is the radius cutoff lookup table data from AASHTO 1994 Table III-7 thru III-11. The `Row: Radius Cutoff Table` list box includes the following items: Max Superelevation, Design Speed and Rmin.

- **Max Superelevation** Item - Unit of measure: percent. The value of this item is the maximum superelevation for design purposes. Superelevation rates are determined using the design maximum superelevation rate. This maximum rate would be used for the sharpest curve recommended (shortest radius) for a given design speed. Maximum Superelevation should be entered as a percentage (%). The unit of measure for this item is percent.
- **Design Speed** Item - Unit of measure: kilometers/hour (miles/hour). The value of this item is the design speed for the highway. The 2001 AASHTO policy defines design speed as a selected value used to determine the various geometric design features of the highway. The unit of measure for this item is kilometers/hour (miles/hour).
- **Rmin** Item - Unit of measure: meters (feet). This item is the radius cutoff. The unit of measure for this item is meters (feet).

2.2.1.13 Table: Max Gradient Tab

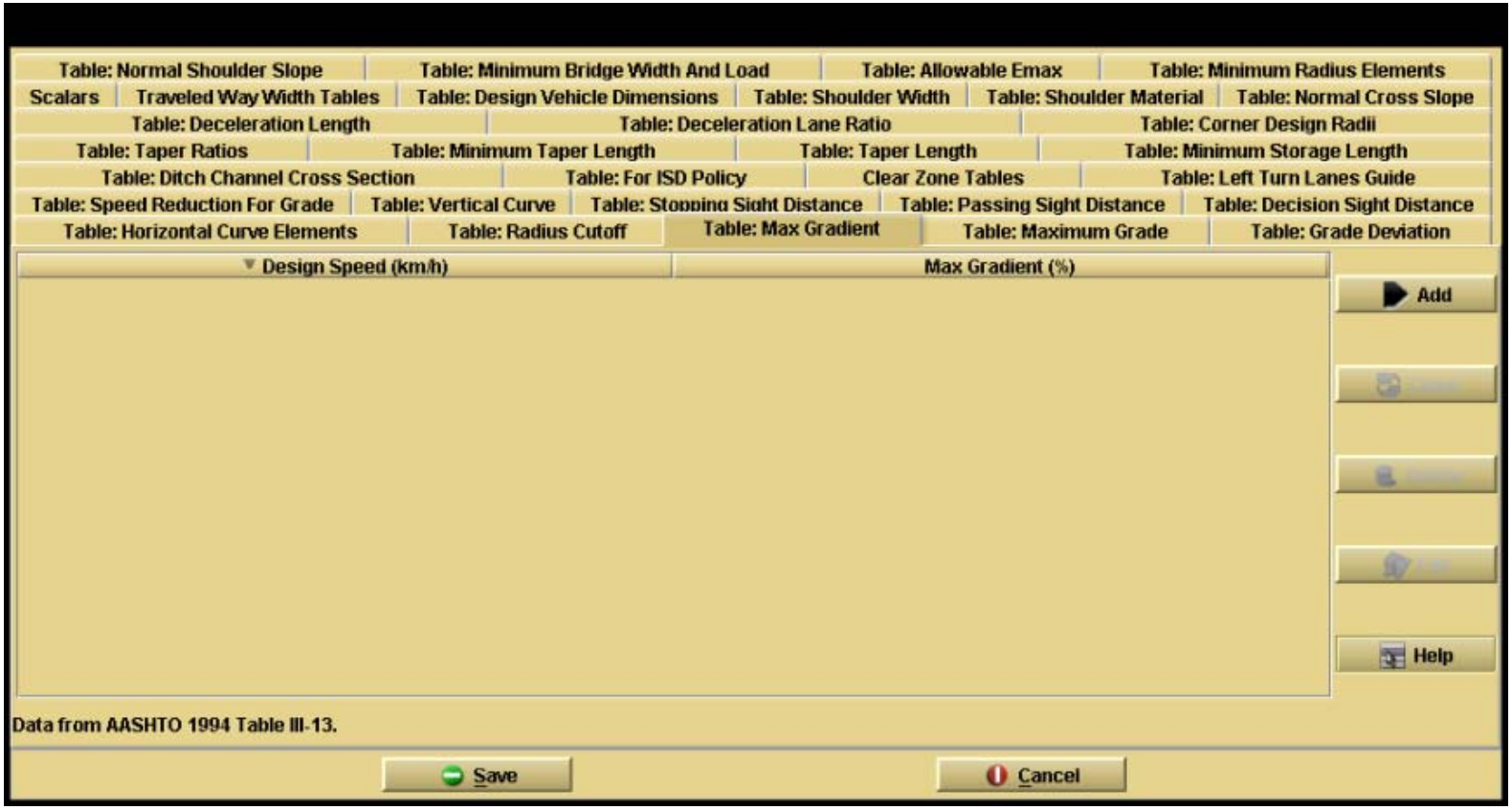

Figure 20 Table: Max Gradient Tab

The **`Table: Max Gradient`** tab includes the following widgets: Row: Max Gradient Table.

- **Row: Max Gradient Table** List Box - Widget type: list box. This table is the relationship of design speed to maximum relative profile gradients lookup table data from AASHTO 1994 Table III-13. The **`Row: Max Gradient Table`** list box includes the following items: Design Speed and Max Gradient.
  - **Design Speed** Item - Unit of measure: kilometers/hour (miles/hour). The value of this item is the design speed for the highway. The 2001 AASHTO policy defines design speed as a selected value used to determine the various geometric design features of the highway. The unit of measure for this item is kilometers/hour (miles/hour).
  - **Max Gradient** Item - Unit of measure: percent. This item is the maximum relative profile gradient. The unit of measure for this item is percent.

2.2.1.14 Table: Maximum Grade Tab

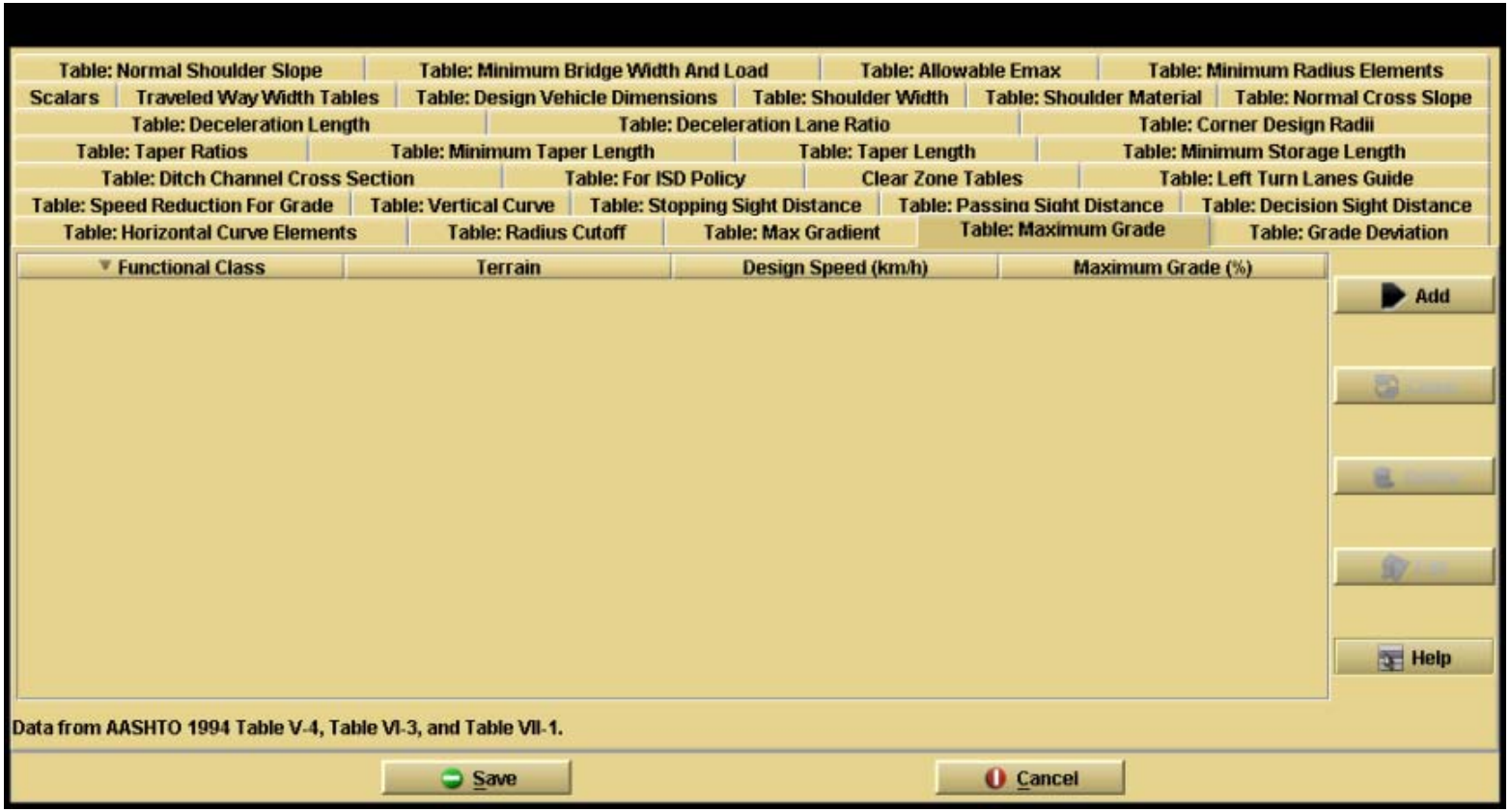

Figure 21 Table: Maximum Grade Tab

The **`Table: Maximum Grade`** tab includes the following widgets: Row: Maximum Grade Table.

- **Row: Maximum Grade Table** List Box - Widget type: list box. This item is the maximum grade table. Based on the design speed and the type of terrain, maximum grades are recommended in order to prevent a large difference in operating speeds (between passenger cars and heavy vehicles and between heavy vehicles on level roads and then on upgrades). The combination of grades and the length of the grade is also an important factor. Though a grade may be below the maximum, a long upgrade could affect the operation of heavy vehicles. Reference data from AASHTO 1994 Table V-4, Table VI-3, and Table VII-1. The **`Row: Maximum Grade Table`** list box includes the following items: Functional Class, Terrain, Design Speed and Maximum Grade.
    - **Functional Class** Item - This combo box determines the functional classification of a highway. The functional classification of a highway describes the character of service it is intended to provide. The enumeration values are: **`arterial`**, **`collector`** and **`local`**.
    - **Terrain** Item - This combo box determines the highway terrain. Terrain classifications pertain to the general character of topography of the the land traversed by the highway. The enumeration values are: **`level`**, **`rolling`**, **`mountainous`** and **`null`**.
    - **Design Speed** Item - Unit of measure: kilometers/hour (miles/hour). The value of this item is the design speed for the highway. The 2001 AASHTO policy defines design speed as a selected value used to determine the various geometric design features of the highway. The unit of measure for this item is kilometers/hour (miles/hour).
    - **Maximum Grade** Item - Unit of measure: percent. This item is the maximum grade allowed. The unit of measure for this item is percent.

2.2.1.15 Table: Grade Deviation Tab

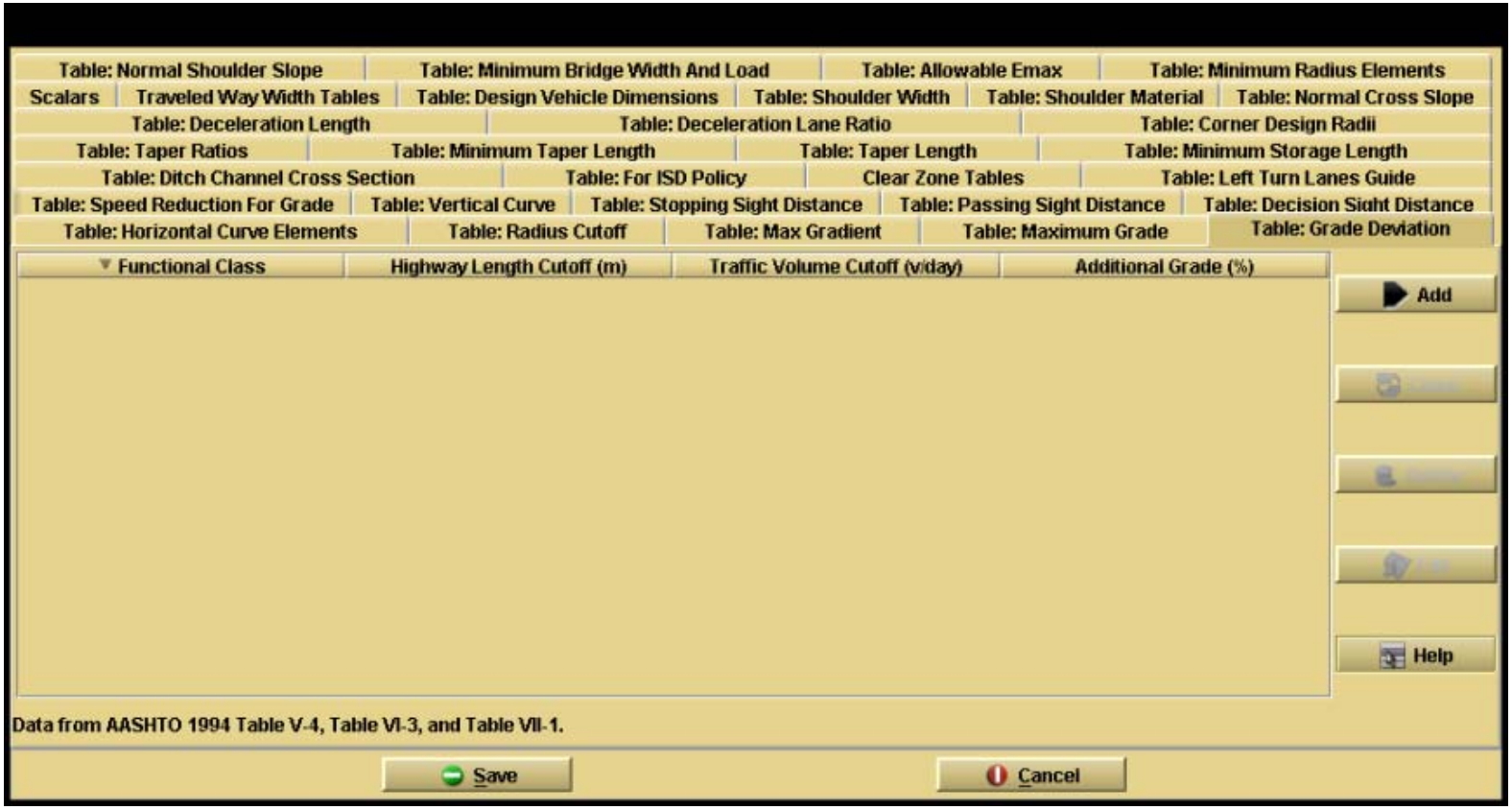

Figure 22 Table: Grade Deviation Tab

The **`Table: Grade Deviation`** tab includes the following widgets: Row: Maximum Grade Deviation Table.

- **Row: Maximum Grade Deviation Table** List Box - Widget type: list box. This item is the maximum grade deviation table. Based on the design speed and the type of terrain, maximum grades are recommended in order to prevent a large difference in operating speeds (between passenger cars and heavy vehicles and between heavy vehicles on level roads and then on upgrades). The combination of grades and the length of the grade is also an important factor. Though a grade may be below the maximum, a long upgrade could affect the operation of heavy vehicles. Reference data from AASHTO 1994 Table V-4, Table VI-3, and Table VII-1. The **`Row: Maximum Grade Deviation Table`** list box includes the following items: Functional Class, Highway Length Cutoff, Traffic Volume Cutoff and Additional Grade.
    - **Functional Class** Item - This combo box determines the functional classification of a highway. The functional classification of a highway describes the character of service it is intended to provide. The enumeration values are: **`arterial`**, **`collector`** and **`local`**.

- **Highway Length Cutoff** Item - Unit of measure: meters (feet). This item is the maximum length of highway for which table grades apply. The unit of measure for this item is meters (feet).
- **Traffic Volume Cutoff** Item - Unit of measure: vehicles/day. This item is the maximum volume for which the table grades apply. The unit of measure for this item is vehicles/day.
- **Additional Grade** Item - Unit of measure: percent. This item is the additional grade. For some types of roads, the maximum grade for short lengths can vary from the recommended maximum by a couple percent. The unit of measure for this item is percent.

2.2.1.16 Table: Speed Reduction For Grade Tab

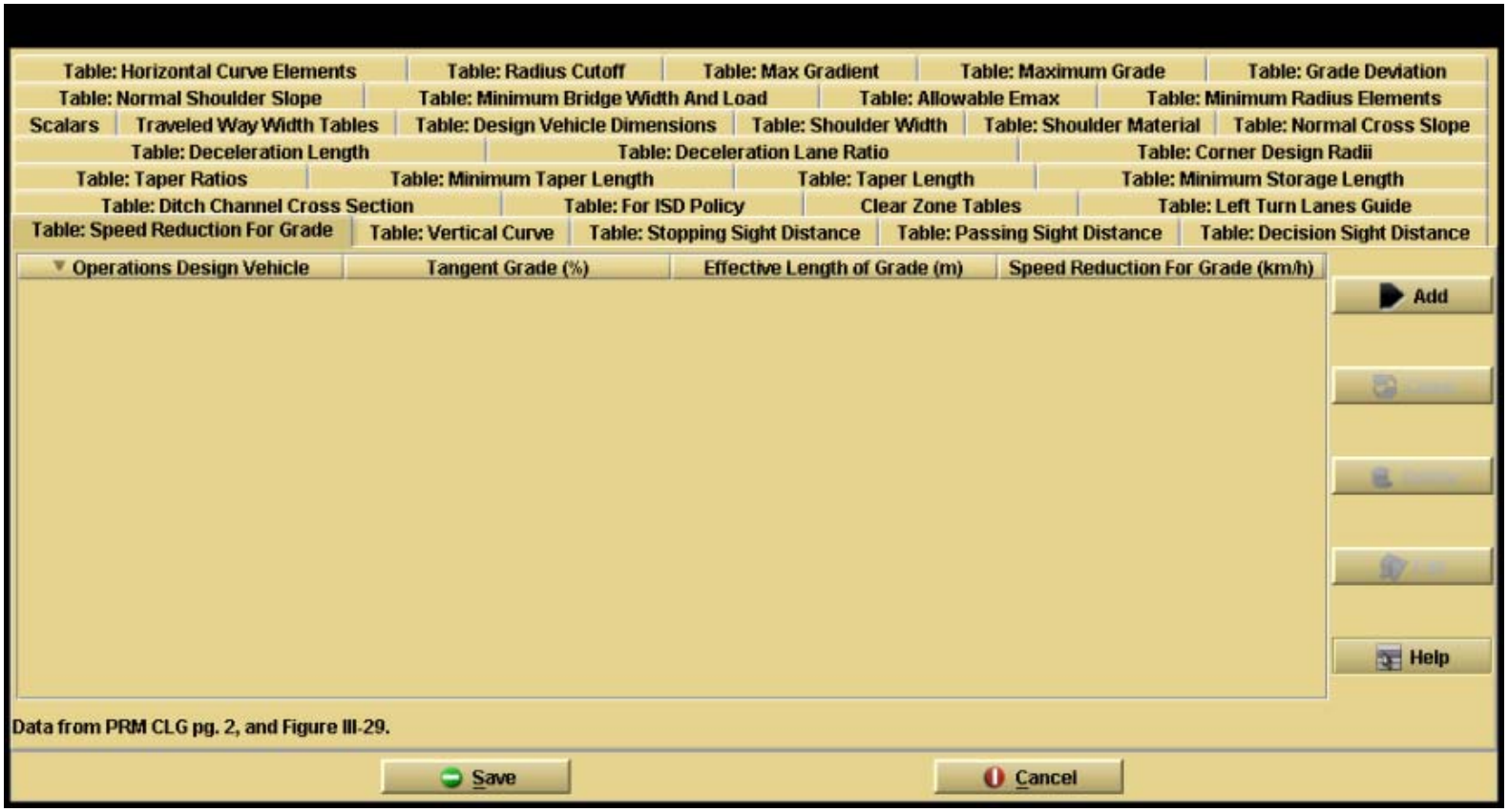

Figure 23 Table: Speed Reduction For Grade Tab

The `Table: Speed Reduction For Grade` tab includes the following widgets: Row: Speed Reduction For Grade Table.

- **Row: Speed Reduction For Grade Table** List Box - Widget type: list box. This table is the speed reduction for grade lookup table data from PRM CLG pg. 2, and Figure III-29. The `Row: Speed Reduction For Grade Table` list box includes the following items: Operations Design Vehicle, Tangent Grade, Effective Length of Grade and Speed Reduction For Grade.
    - **Operations Design Vehicle** Item - This combo box determines the design vehicles for operations. The enumeration values are: `typical heavy truck` and `recreational vehicle`.

      WSDOT uses Heavy Truck for its Speed Reduction for Grade.

    - **Tangent Grade** Item - Unit of measure: percent. The value of this item is the tangent grade. -% is descending; +% is ascending. The unit of measure for this item is percent.
    - **Effective Length of Grade** Item - Unit of measure: meters (feet). This item is the effective length of vertical grade. The unit of measure for this item is meters (feet).
    - **Speed Reduction For Grade** Item - Unit of measure: kilometers/hour (miles/hour). This item is the speed reduction for grade. The unit of measure for this item is kilometers/hour (miles/hour).

2.2.1.17 Table: Vertical Curve Tab

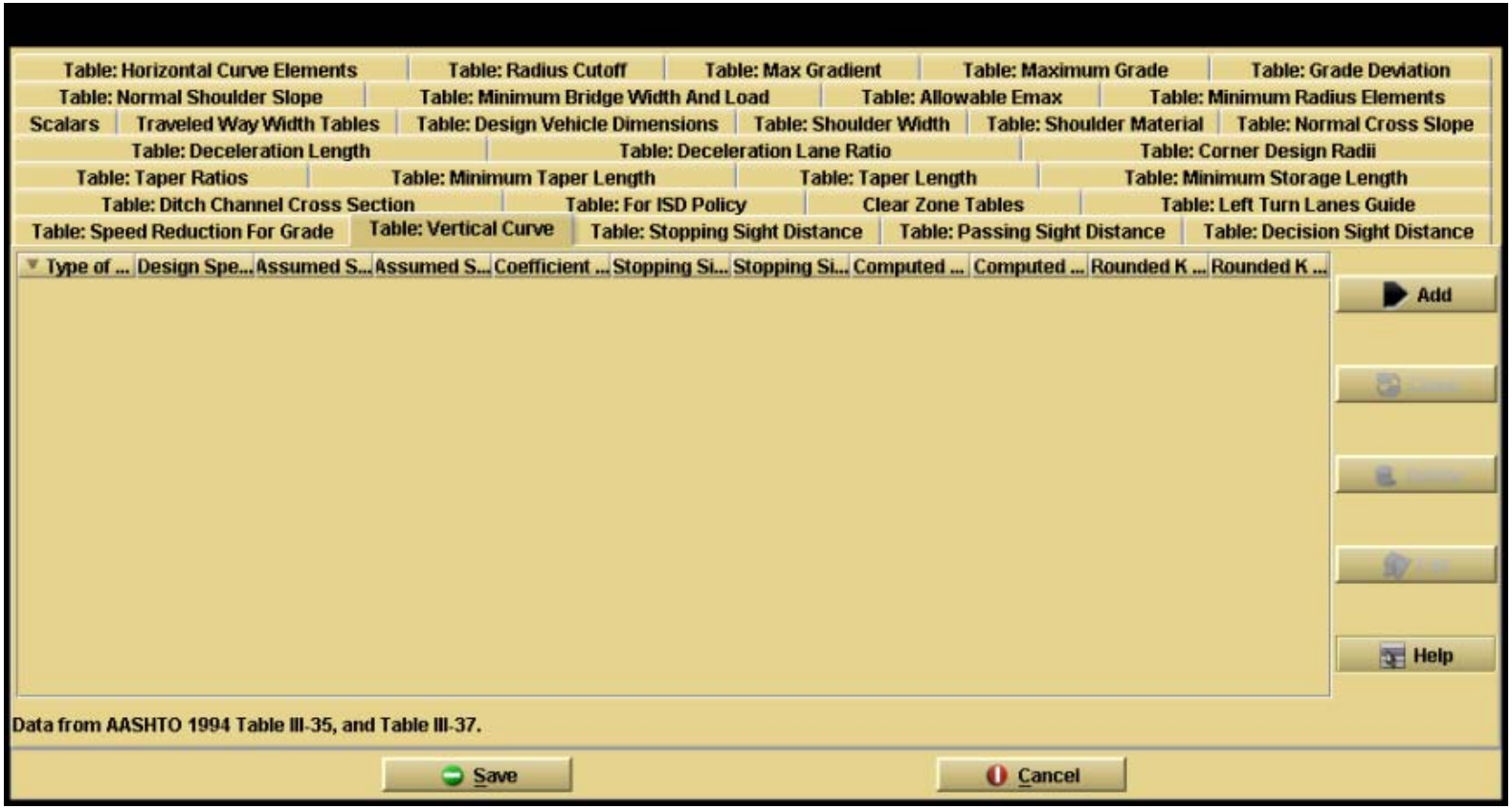

Figure 24 Table: Vertical Curve Tab

The **`Table: Vertical Curve`** tab includes the following widgets: Row: Vertical Curve Table.

- **Row: Vertical Curve Table** List Box - Widget type: list box. This table is the design controls for vertical curves lookup table data from AASHTO 1994 Table III-35, and Table III-37. The **`Row: Vertical Curve Table`** list box includes the following items: Type of Vertical Curve, Design Speed, Assumed Speed - Lower Bounds, Assumed Speed - Upper Bounds, Coefficient of Friction - F, Stopping Sight Distance - Lower Bounds, Stopping Sight Distance - Upper Bounds, Computed K - Lower Bounds, Computed K - Upper Bounds, Rounded K - Lower Bounds and Rounded K - Upper Bounds.
    - **Type of Vertical Curve** Item - This item is the type of vertical curve. The enumeration values are: **`crest`** and **`sag`**.
    - **Design Speed** Item - Unit of measure: kilometers/hour (miles/hour). The value of this item is the design speed for the highway. The 2001 AASHTO policy defines design speed as a selected value used to determine the various geometric design features of the highway. The unit of measure for this item is kilometers/hour (miles/hour).

- **Assumed Speed - Lower Bounds** Item - Unit of measure: kilometers/hour (miles/hour). This item is the assumed speed for condition, lower bounds. The unit of measure for this item is kilometers/hour (miles/hour).
- **Assumed Speed - Upper Bounds** Item - Unit of measure: kilometers/hour (miles/hour). This item is the assumed speed for condition, upper bounds. The unit of measure for this item is kilometers/hour (miles/hour).
- **Coefficient of Friction - F** Item - This item is the coefficient of friction, f.
- **Stopping Sight Distance - Lower Bounds** Item - Unit of measure: meters (feet). This item is the stopping sight distance for design (m), lower bounds. The unit of measure for this item is meters (feet).
- **Stopping Sight Distance - Upper Bounds** Item - Unit of measure: meters (feet). This item is the stopping sight distance for design (m), upper bounds. The unit of measure for this item is meters (feet).
- **Computed K - Lower Bounds** Item - Unit of measure: meters/% (feet/%). This item is the computed rate of vertical curvature (k), lower bounds. The unit of measure for this item is meters/% (feet/%).
- **Computed K - Upper Bounds** Item - Unit of measure: meters/% (feet/%). This item is the computed rate of vertical curvature (k), upper bounds. The unit of measure for this item is meters/% (feet/%).
- **Rounded K - Lower Bounds** Item - Unit of measure: meters/% (feet/%). This item is the rounded rate of vertical curvature (k), lower bounds. The unit of measure for this item is meters/% (feet/%).
- **Rounded K - Upper Bounds** Item - Unit of measure: meters/% (feet/%). This item is the rounded rate of vertical curvature (k), upper bounds. The unit of measure for this item is meters/% (feet/%).

2.2.1.18 Table: Stopping Sight Distance Tab

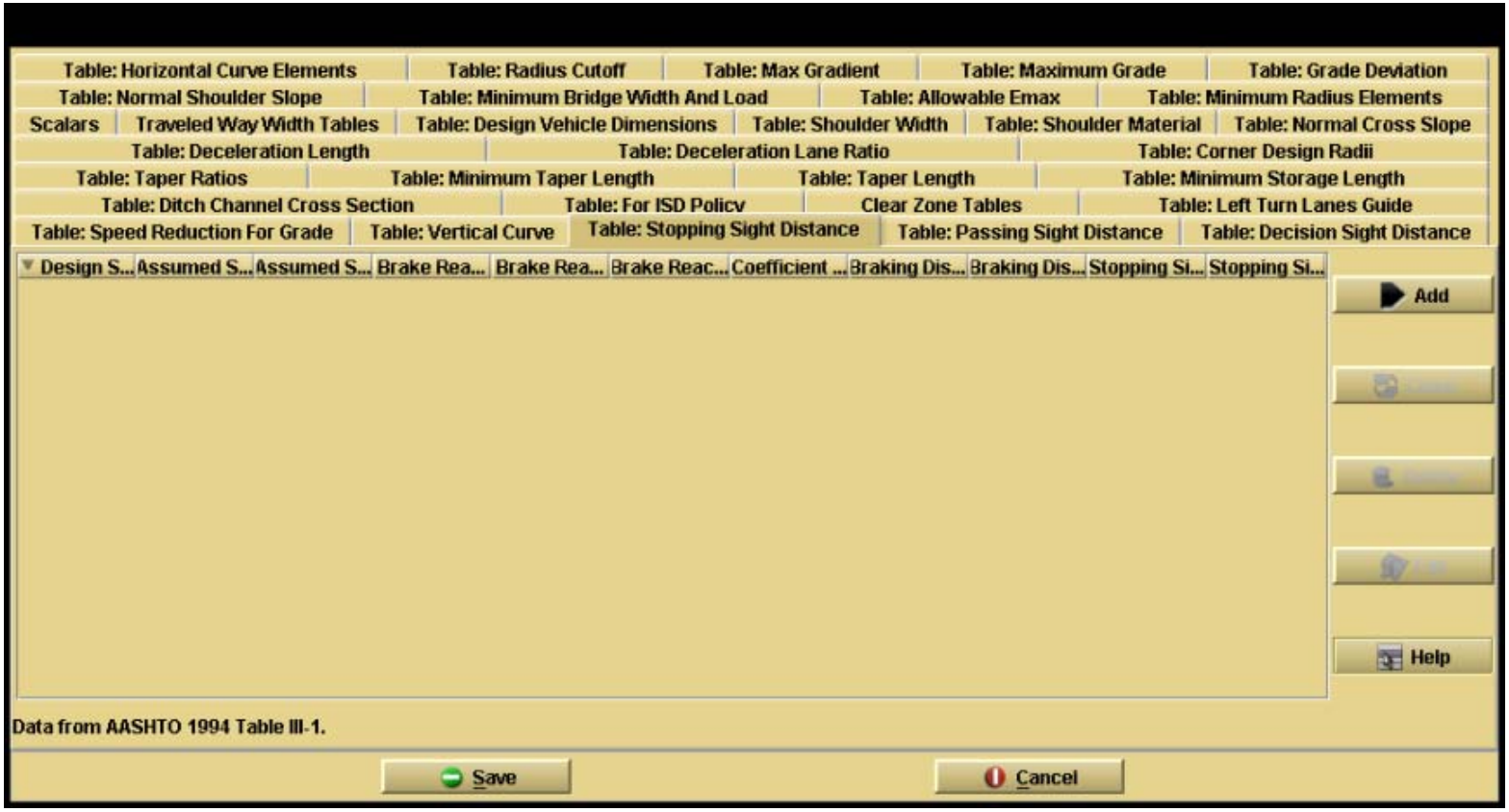

Figure 25 Table: Stopping Sight Distance Tab

The **`Table: Stopping Sight Distance`** tab includes the following widgets: Row: Stopping Sight Distance Table.

- **Row: Stopping Sight Distance Table** List Box - Widget type: list box. This table is the stopping sight distance lookup table (wet pavements). SSD is calculated to accommodate vehicle braking characteristics on wet pavements and with worn tires. Reference data from AASHTO 1994 Table III-1. The **`Row: Stopping Sight Distance Table`** list box includes the following items: Design Speed, Assumed Speed - Lower Bounds, Assumed Speed - Upper Bounds, Brake Reaction Time, Brake Reaction Distance - Lower Bounds, Brake Reaction Distance - Upper Bounds, Coefficient of Friction - F, Braking Distance - Lower Bounds, Braking Distance - Upper Bounds, Stopping Sight Distance - Lower Bounds and Stopping Sight Distance - Upper Bounds.
    - **Design Speed** Item - Unit of measure: kilometers/hour (miles/hour). The value of this item is the design speed for the highway. The 2001 AASHTO policy defines design speed as a selected value used to determine the various geometric design features of the highway. The unit of measure for this item is kilometers/hour (miles/hour).

- **Assumed Speed - Lower Bounds** Item - Unit of measure: kilometers/hour (miles/hour). This item is the assumed speed for condition, lower bounds. The unit of measure for this item is kilometers/hour (miles/hour).
- **Assumed Speed - Upper Bounds** Item - Unit of measure: kilometers/hour (miles/hour). This item is the assumed speed for condition, upper bounds. The unit of measure for this item is kilometers/hour (miles/hour).
- **Brake Reaction Time** Item - Unit of measure: seconds. This item is the brake reaction time. SSD calculations accommodate not only the distance it takes vehicles to stop, but also the distance that vehicles travel while the driver is reacting to an object in the highway and deciding to stop. No value needs to be specified for this item. The unit of measure for this item is seconds.
- **Brake Reaction Distance - Lower Bounds** Item - Unit of measure: meters (feet). This item is the brake reaction distance, lower bounds. No value needs to be specified for this item. The unit of measure for this item is meters (feet).
- **Brake Reaction Distance - Upper Bounds** Item - Unit of measure: meters (feet). This item is the brake reaction distance, upper bounds. The unit of measure for this item is meters (feet).
- **Coefficient of Friction - F** Item - This item is the coefficient of friction, f.
- **Braking Distance - Lower Bounds** Item - Unit of measure: meters (feet). This item is the braking distance, lower bounds. The unit of measure for this item is meters (feet).
- **Braking Distance - Upper Bounds** Item - Unit of measure: meters (feet). This item is the braking distance, upper bounds. The unit of measure for this item is meters (feet).
- **Stopping Sight Distance - Lower Bounds** Item - Unit of measure: meters (feet). This item is the stopping sight distance for design (m), lower bounds. The unit of measure for this item is meters (feet).
- **Stopping Sight Distance - Upper Bounds** Item - Unit of measure: meters (feet). This item is the stopping sight distance for design (m), upper bounds. The unit of measure for this item is meters (feet).

2.2.1.19 Table: Passing Sight Distance Tab

Figure 26 Table: Passing Sight Distance Tab

The **`Table: Passing Sight Distance`** tab includes the following widgets: Row: Passing Sight Distance Table.

- **Row: Passing Sight Distance Table** List Box - Widget type: list box. This table is the minimum passing sight distance for design of two-lane highways lookup table. Reference data from AASHTO 1994 Table III-5. The **`Row: Passing Sight Distance Table`** list box includes the following items: Design Speed, Passed Vehicle Speed, Passing Vehicle Speed, Minimum PSD and Rounded PSD.
  - **Design Speed** Item - Unit of measure: kilometers/hour (miles/hour). The value of this item is the design speed for the highway. The 2001 AASHTO policy defines design speed as a selected value used to determine the various geometric design features of the highway. The unit of measure for this item is kilometers/hour (miles/hour).
  - **Passed Vehicle Speed** Item - Unit of measure: kilometers/hour (miles/hour). This item is the assumed speed of the passed vehicle. The unit of measure for this item is kilometers/hour (miles/hour).
  - **Passing Vehicle Speed** Item - Unit of measure: kilometers/hour (miles/hour). This item is the assumed speed of the passing vehicle. The unit of measure for this item is kilometers/hour (miles/hour).

- **Minimum PSD** Item - Unit of measure: meters (feet). This item is the minimum passing sight distance for design. The unit of measure for this item is meters (feet).
- **Rounded PSD** Item - Unit of measure: meters (feet). This item is the rounded passing sight distance for design. This item is defined in AASHTO 2001 but not AASHTO 1990/1994. No value needs to be specified for this item. The unit of measure for this item is meters (feet).

2.2.1.20 Table: Decision Sight Distance Tab

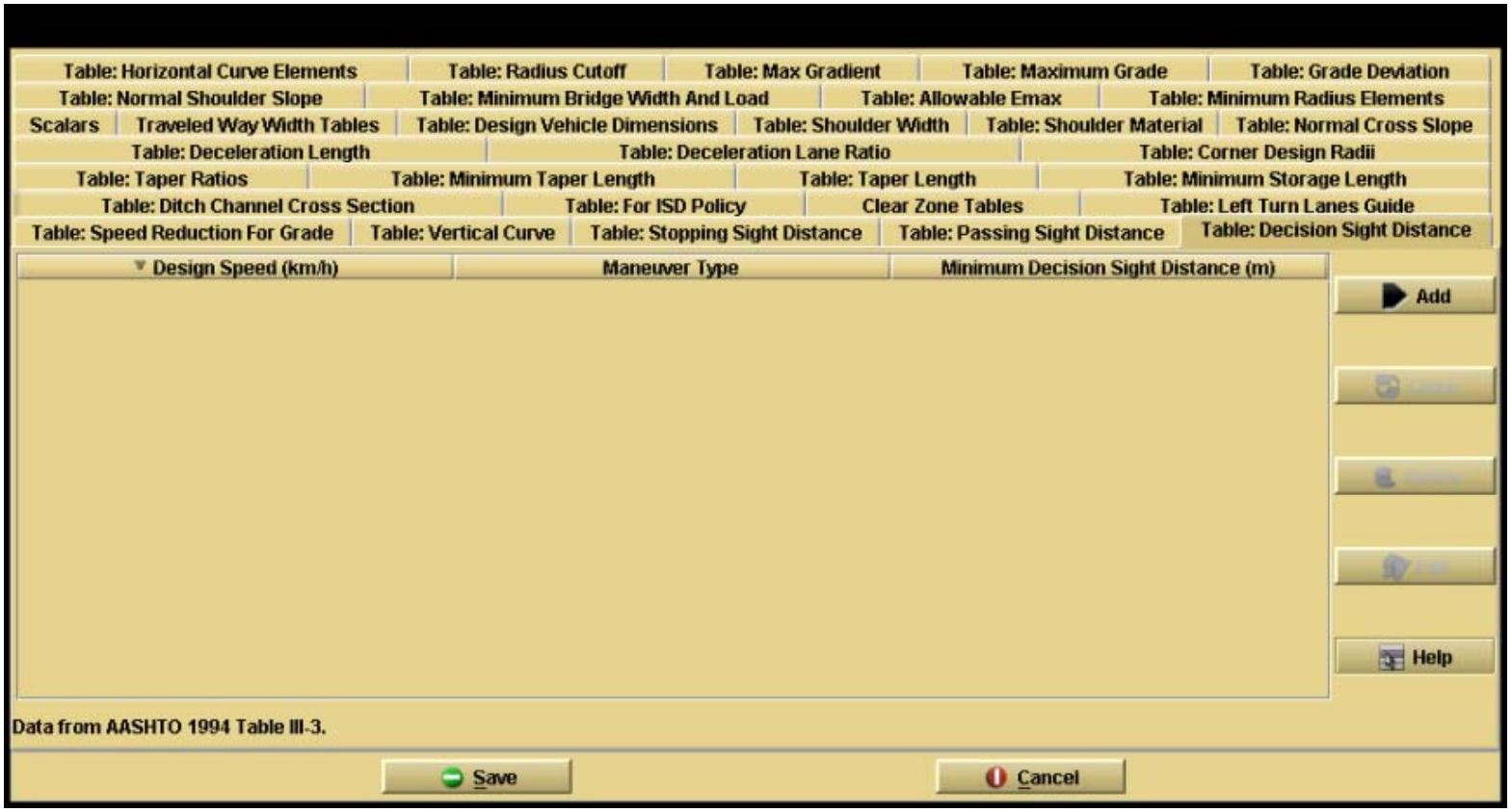

Figure 27 Table: Decision Sight Distance Tab

The `Table: Decision Sight Distance` tab includes the following widgets: Row: Decision Sight Distance Table.

- **Row: Decision Sight Distance Table** List Box - Widget type: list box. This table is the minimum decision sight distance lookup table. Reference data from AASHTO 1994 Table III-3. The `Row: Decision Sight Distance Table` list box includes the following items: Design Speed, Maneuver Type and Minimum Decision Sight Distance.

- **Design Speed** Item - Unit of measure: kilometers/hour (miles/hour). The value of this item is the design speed for the highway. The 2001 AASHTO policy defines design speed as a selected value used to determine the various geometric design features of the highway. The unit of measure for this item is kilometers/hour (miles/hour).
- **Maneuver Type** Item - This item is the avoidance maneuver type. The type of maneuver a driver has to perform determines the DSD needed. DSD is dependent on whether the road is in a rural or urban environment. The enumeration values are: `A`, `B`, `C`, `D` and `E`.
- **Minimum Decision Sight Distance** Item - Unit of measure: meters (feet). This item is the minimum decision sight distance. The unit of measure for this item is meters (feet).

2.2.1.21 Table: Ditch Channel Cross Section Tab

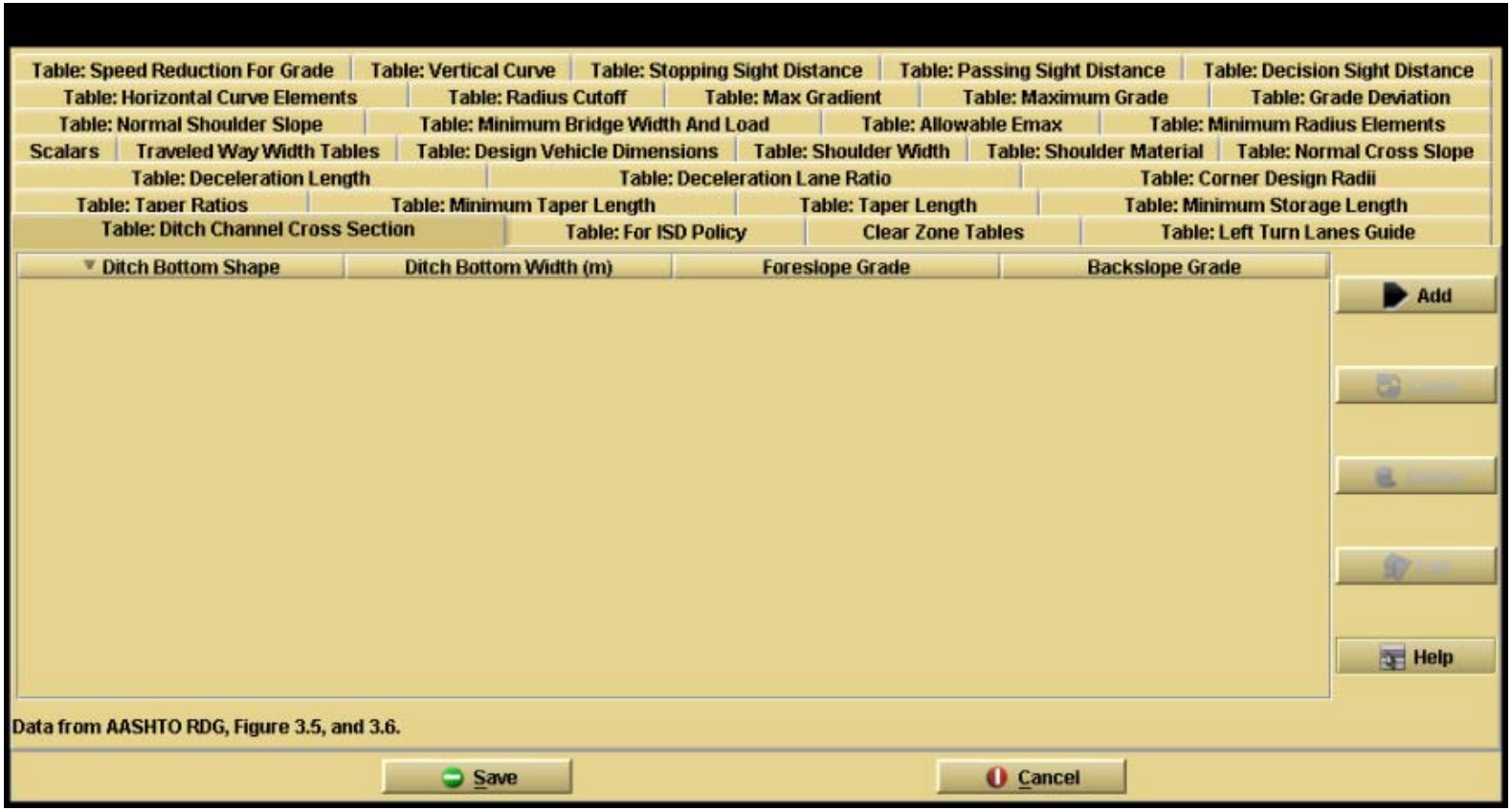

Figure 28 Table: Ditch Channel Cross Section Tab

The `Table: Ditch Channel Cross Section` tab includes the following widgets: Row: Ditch Channel Cross Section.

- **Row: Ditch Channel Cross Section** List Box - Widget type: list box. This table is the ditch channel cross section lookup table data from PRM NDD Figure 3.5, and 3.6. The **`Row: Ditch Channel Cross Section`** list box includes the following items: Ditch Bottom Shape, Ditch Bottom Width, Foreslope Grade and Backslope Grade.
    - **Ditch Bottom Shape** Item - The value of this item is the ditch bottom shape. Ditches can be 'V' shaped or trapezoidal. Trapezoidal ditch bottoms can be rounded or flat. The enumeration values are: **`true V`**, **`rounded V`**, **`rounded trapezoidal`** and **`flat trapezoidal`**.
    - **Ditch Bottom Width** Item - Unit of measure: meters (feet). The value of this item is the width of bottom of the ditch. The unit of measure for this item is meters (feet).
    - **Foreslope Grade** Item - Unit of measure: rise:run. This item is the grade of roadside foreslope. The unit of measure for this item is rise:run.
    - **Backslope Grade** Item - Unit of measure: rise:run. This item is the grade of roadside backslope. The unit of measure for this item is rise:run.

2.2.1.22 Table: For ISD Policy Tab

The **`Table: For ISD Policy`** tab includes the following sub-tabs: Row: Distance Traveled In 3.0s, Row: Stopping Distance, Row: Stopping Distance, Row: Sight Distance, Acceleration Time, Acceleration Time Factor and ISD Case Values. The Edit IHSDM Policy Tables Frame includes the tabs described in the following sections.

2.2.1.22.1 Row: Distance Traveled In 3.0s Tab

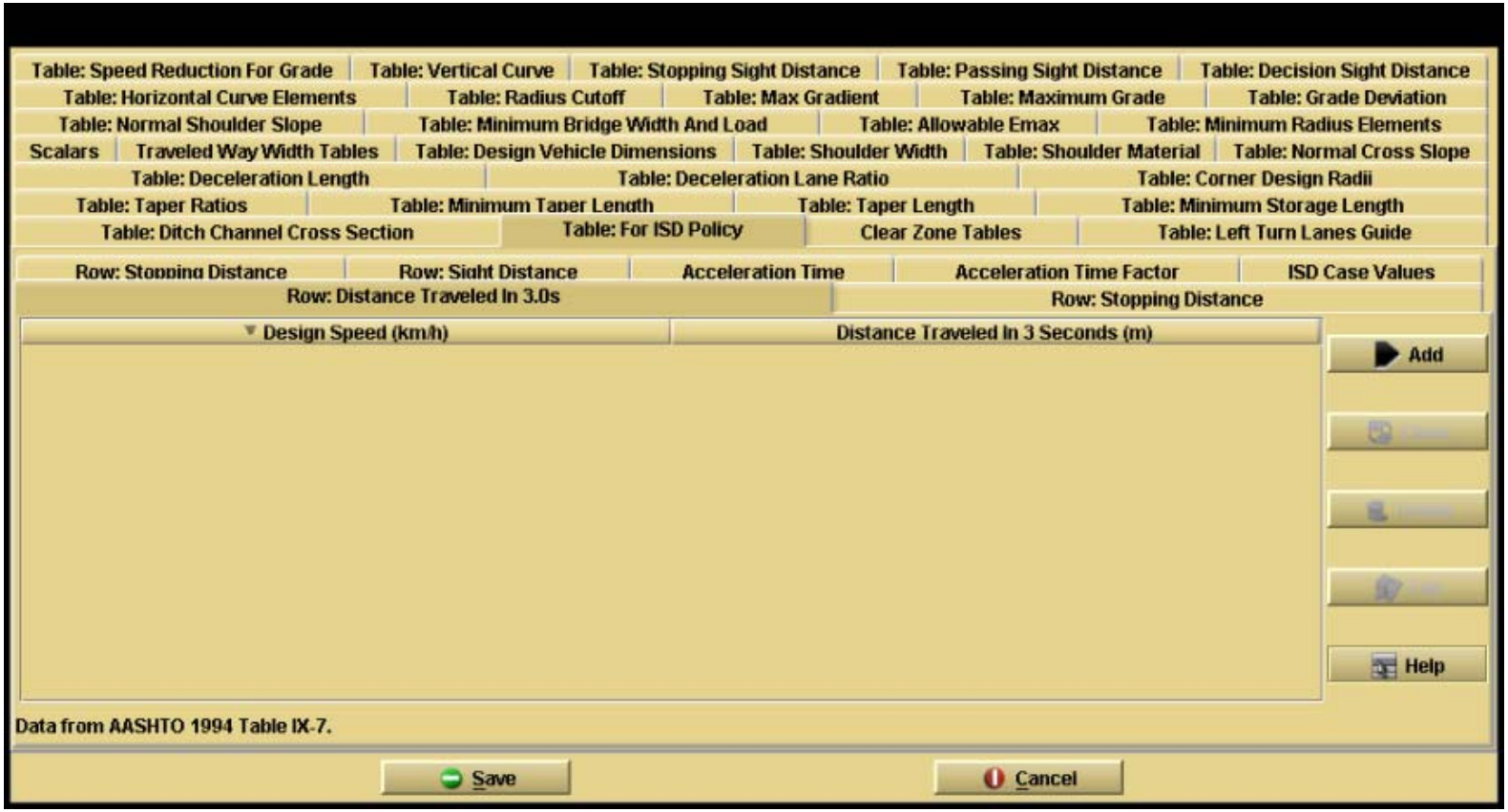

Figure 29 Table: For ISD Policy/Row: Distance Traveled In 3.0s Tab

The `Row: Distance Traveled In 3.0s` tab includes the following widgets: Row: Distance Traveled In 3.0s.

- **Row: Distance Traveled In 3.0s** List Box - Widget type: list box. This table is the distance traveled in 3.0s lookup table. Reference data from AASHTO 1994 Table IX-7. The `Row: Distance Traveled In 3.0s` list box includes the following items: Design Speed and Distance Traveled In 3 Seconds.
    - **Design Speed** Item - Unit of measure: kilometers/hour (miles/hour). The value of this item is the design speed for the highway. The 2001 AASHTO policy defines design speed as a selected value used to determine the various geometric design features of the highway. The unit of measure for this item is kilometers/hour (miles/hour).
    - **Distance Traveled In 3 Seconds** Item - Unit of measure: meters (feet). This item is the distance traveled In 3 seconds. The unit of measure for this item is meters (feet).

2.2.1.22.2 Row: Stopping Distance Tab

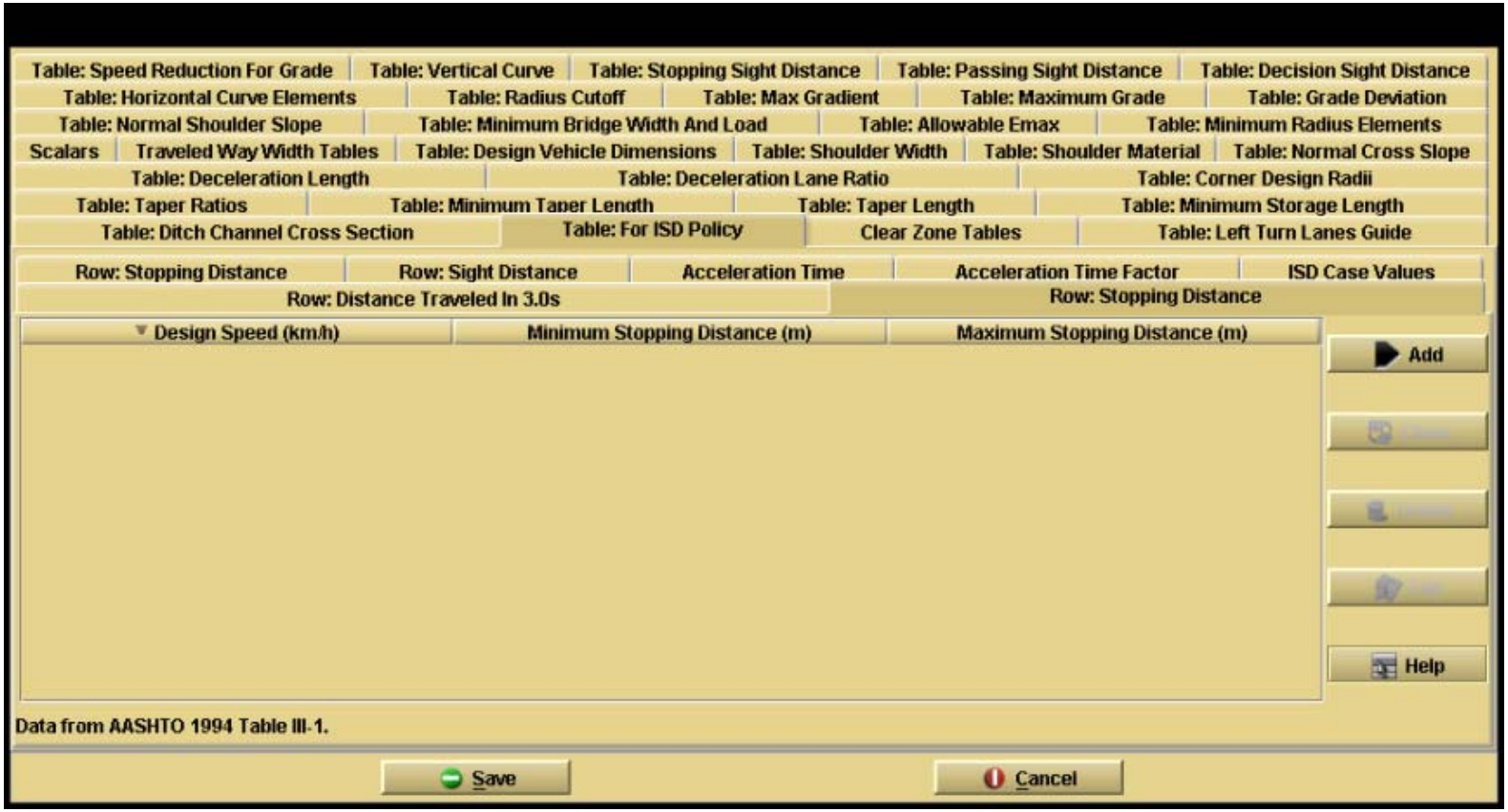

Figure 30 Table: For ISD Policy/Row: Stopping Distance Tab

The `Row: Stopping Distance` tab includes the following widgets: Row: Stopping Distance.

- **Row: Stopping Distance** List Box - Widget type: list box. This table is the stopping distance lookup table. Reference data from AASHTO 1994 Table III-1. The `Row: Stopping Distance` list box includes the following items: Design Speed, Minimum Stopping Distance and Maximum Stopping Distance.
  - **Design Speed** Item - Unit of measure: kilometers/hour (miles/hour). The value of this item is the design speed for the highway. The 2001 AASHTO policy defines design speed as a selected value used to determine the various geometric design features of the highway. The unit of measure for this item is kilometers/hour (miles/hour).
  - **Minimum Stopping Distance** Item - Unit of measure: meters (feet). This item is the minimum stopping distance. The unit of measure for this item is meters (feet).
  - **Maximum Stopping Distance** Item - Unit of measure: meters (feet). This item is the maximum stopping distance. The unit of measure for this item is meters (feet).

2.2.1.22.3 Row: Stopping Distance Tab

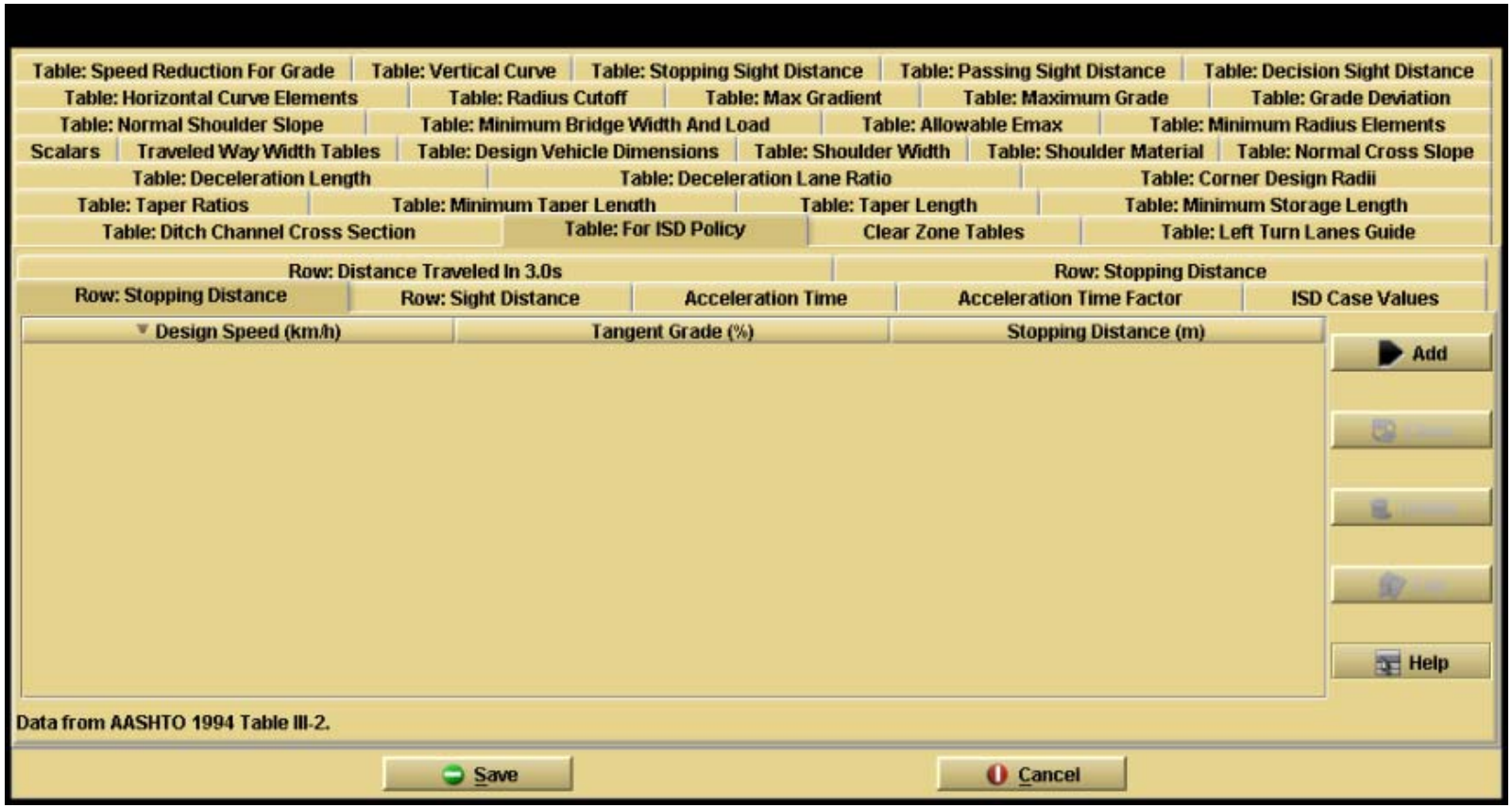

Figure 31 Table: For ISD Policy/Row: Stopping Distance Tab

The `Row: Stopping Distance` tab includes the following widgets: Row: Stopping Distance.

- **Row: Stopping Distance** List Box - Widget type: list box. This table is the stopping distance lookup table. Reference data from AASHTO 1994 Table III-2. The `Row: Stopping Distance` list box includes the following items: Design Speed, Tangent Grade and Stopping Distance.
    - **Design Speed** Item - Unit of measure: kilometers/hour (miles/hour). The value of this item is the design speed for the highway. The 2001 AASHTO policy defines design speed as a selected value used to determine the various geometric design features of the highway. The unit of measure for this item is kilometers/hour (miles/hour).
    - **Tangent Grade** Item - Unit of measure: percent. The value of this item is the tangent grade. -% is descending; +% is ascending. The unit of measure for this item is percent.

- **Stopping Distance** Item - Unit of measure: meters (feet). This item is the stopping distance. The unit of measure for this item is meters (feet).

2.2.1.22.4 Row: Sight Distance Tab

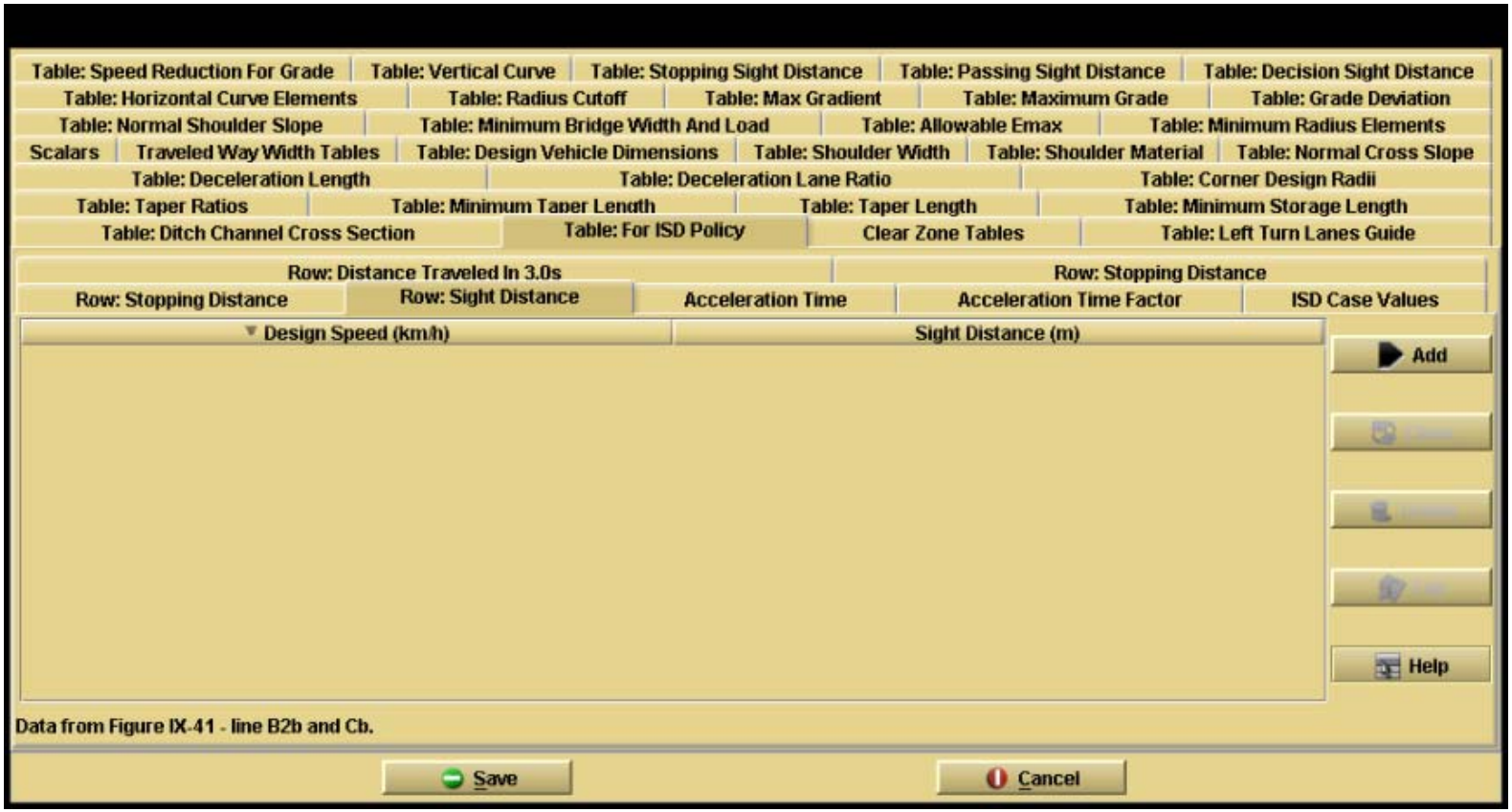

Figure 32 Table: For ISD Policy/Row: Sight Distance Tab

The `Row: Sight Distance` tab includes the following widgets: Row: Sight Distance.

- **Row: Sight Distance** List Box - Widget type: list box. This table is the sight distance lookup table. Reference data from Figure IX-41 - line B2b and Cb. The `Row: Sight Distance` list box includes the following items: Design Speed and Sight Distance.
  - **Design Speed** Item - Unit of measure: kilometers/hour (miles/hour). The value of this item is the design speed for the highway. The 2001 AASHTO policy defines design speed as a selected value used to determine the

various geometric design features of the highway. The unit of measure for this item is kilometers/hour (miles/hour).

- **Sight Distance** Item - Unit of measure: meters (feet). This item is the sight distance. The unit of measure for this item is meters (feet).

2.2.1.22.5 Acceleration Time Tab

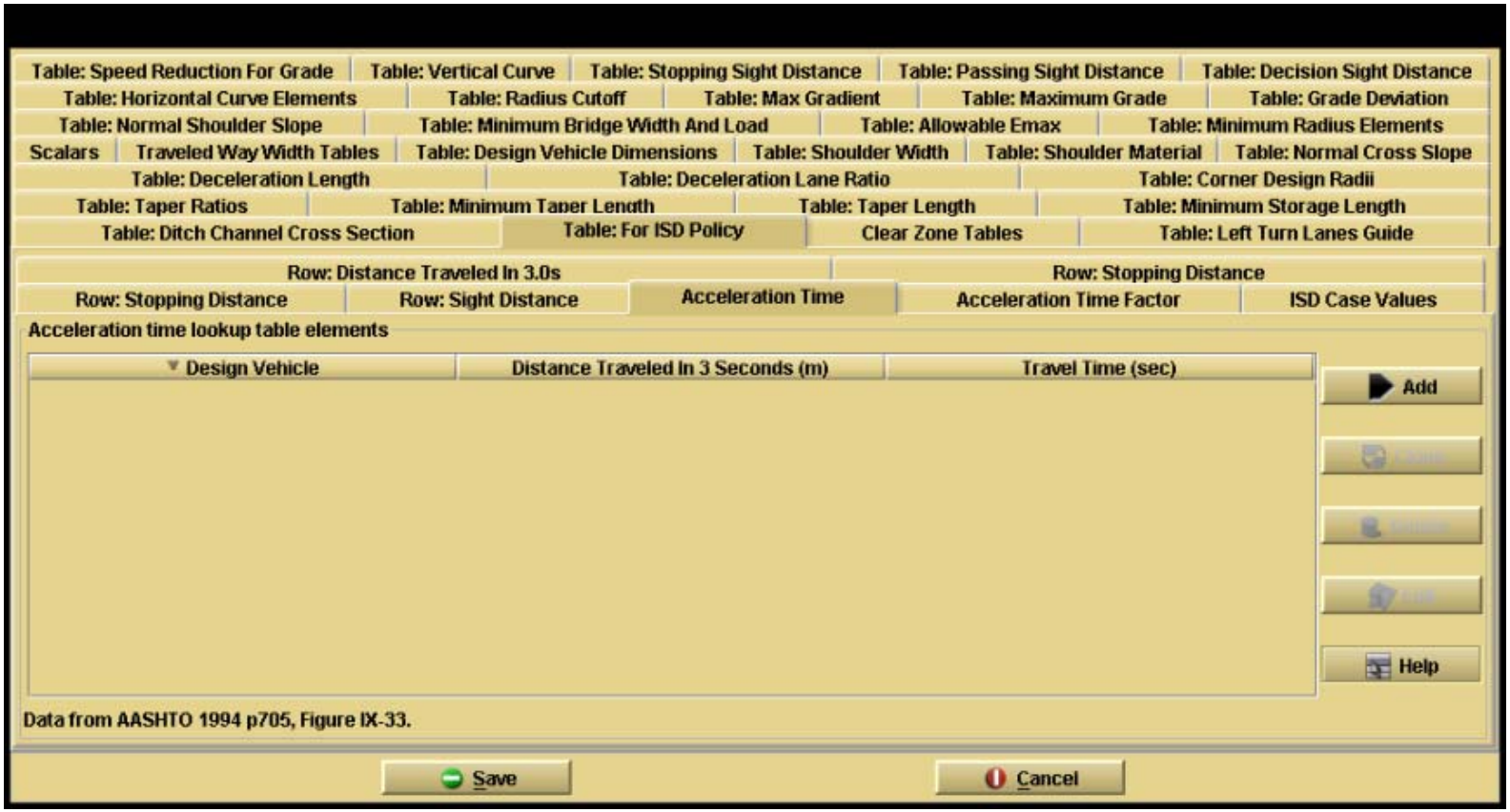

Figure 33 Table: For ISD Policy/Acceleration Time Tab

The `Acceleration Time` tab includes the following widgets: Acceleration Time.

- **Acceleration Time** List Box - Widget type: list box. This item is the acceleration time lookup table elements. The `Acceleration Time` list box includes the following items: Design Vehicle, Distance Traveled In 3 Seconds and Travel Time.
  - **Design Vehicle** Item - . The enumeration values are:

- `SU` (single unit truck),
- `WB-15(WB-50)` (large semitrailer) and
- `P` (passenger car).

- **Distance Traveled In 3 Seconds** Item - Unit of measure: meters (feet). This item is the distance traveled In 3 seconds. The unit of measure for this item is meters (feet).
- **Travel Time** Item - Unit of measure: seconds. This item is the travel time. The unit of measure for this item is seconds.

2.2.1.22.6 Acceleration Time Factor Tab

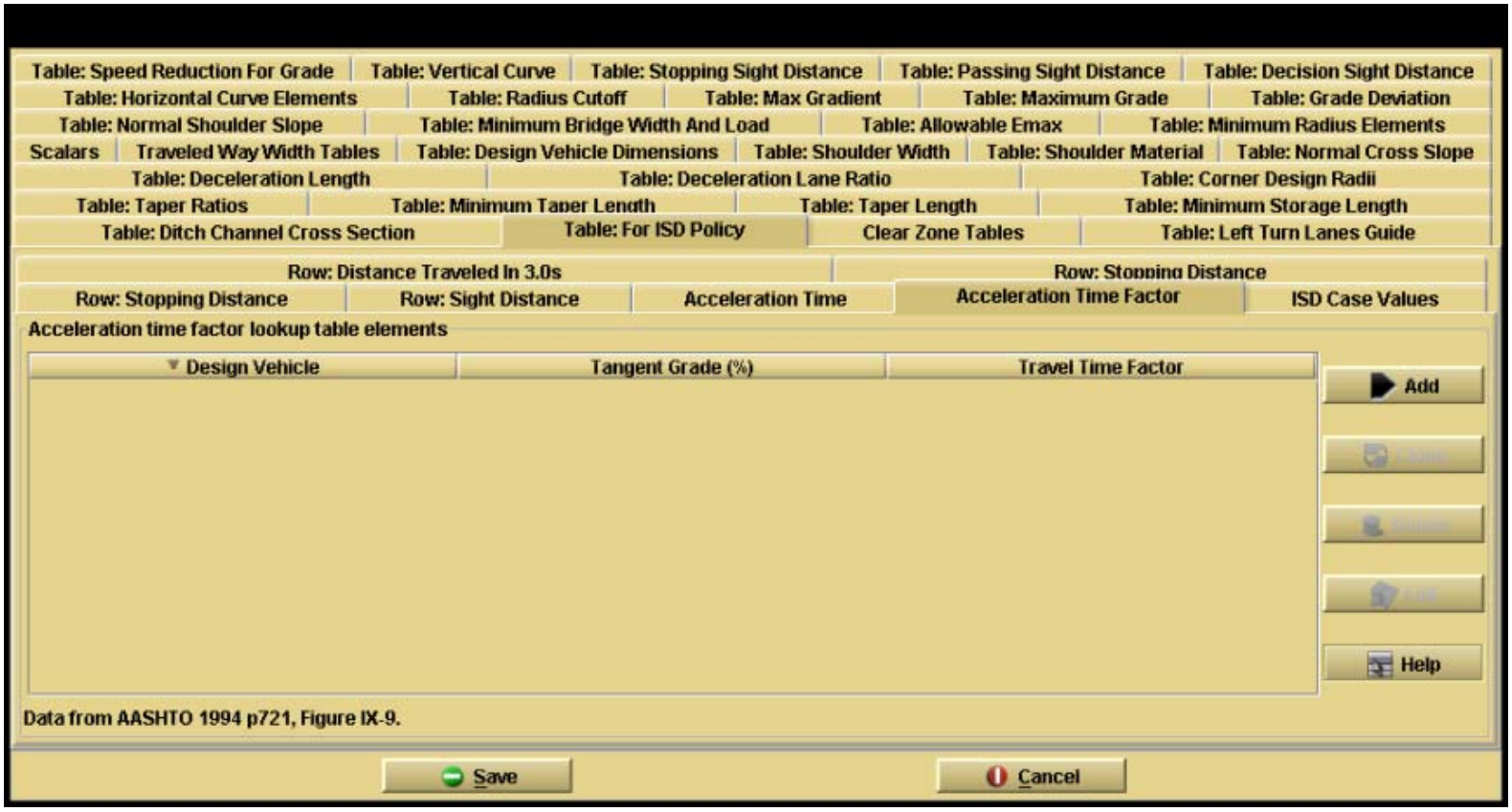

Figure 34 Table: For ISD Policy/Acceleration Time Factor Tab

The `Acceleration Time Factor` tab includes the following widgets: Acceleration Time Factor.

- **Acceleration Time Factor** List Box - Widget type: list box. This item is the acceleration time factor lookup table elements. The **`Acceleration Time Factor`** list box includes the following items: Design Vehicle, Tangent Grade and Travel Time Factor.
    - **Design Vehicle** Item - . The enumeration values are:
        - **`SU`** (single unit truck),
        - **`WB-15 (WB-50)`** (large semitrailer) and
        - **`P`** (passenger car).
    - **Tangent Grade** Item - Unit of measure: percent. The value of this item is the tangent grade. -% is descending; +% is ascending. The unit of measure for this item is percent.
    - **Travel Time Factor** Item - This item is the travel time factor.

2.2.1.22.7 ISD Case Values Tab

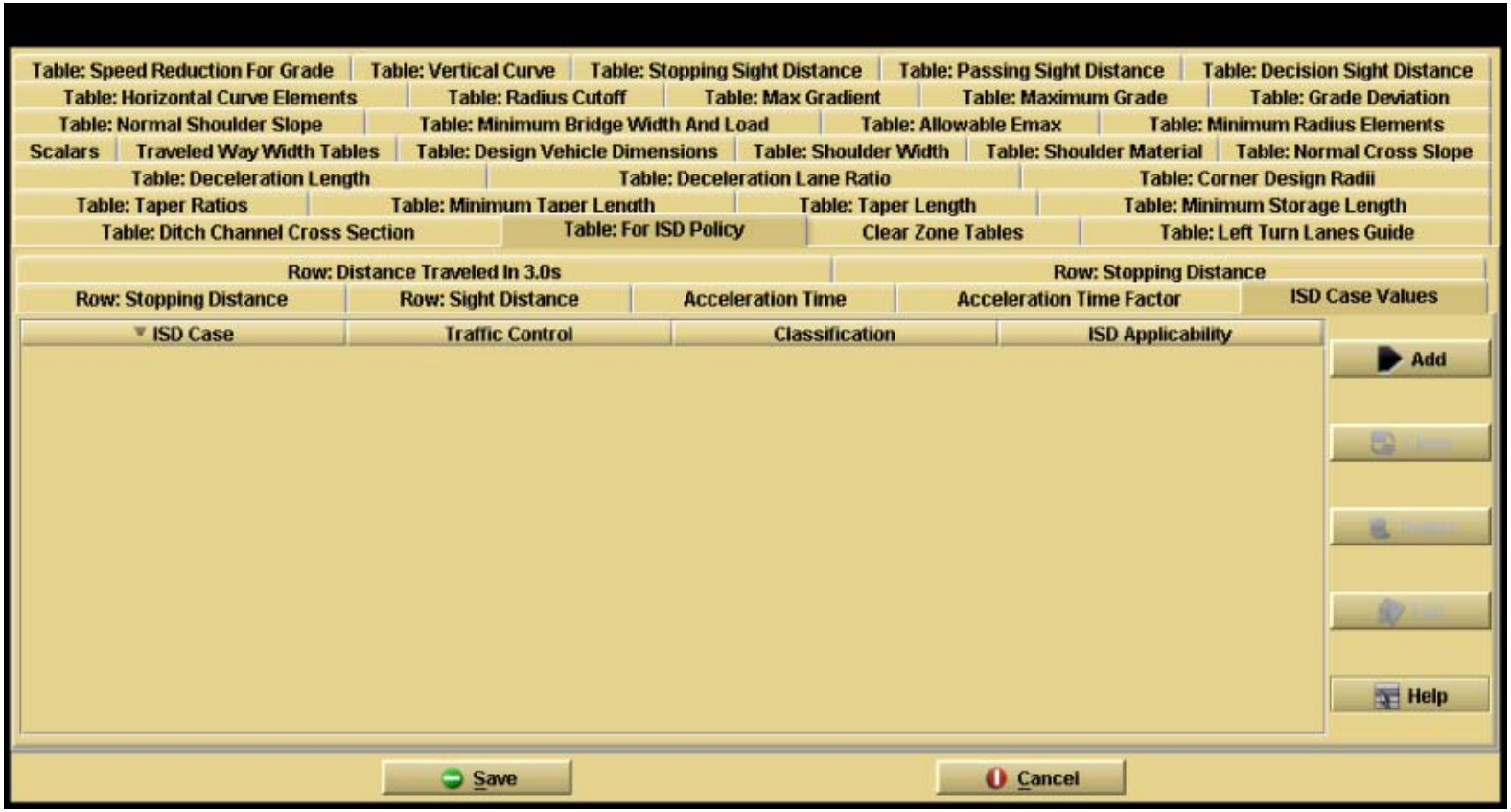

Figure 35 Table: For ISD Policy/ISD Case Values Tab

The `ISD Case Values` tab includes the following widgets: ISD Case Values.

- **ISD Case Values** List Box - Widget type: list box. This table is the ISD case applicability The `ISD Case Values` list box includes the following items: ISD Case, Traffic Control, Classification and ISD Applicability.
  - **ISD Case** Item - This item is the ISD intersection control/maneuver case. The enumeration values are:
    - `I` (AASHTO 1990/1994 ISD Case I, uncontrolled),
    - `II` (AASHTO 1990/1994 ISD Case II, yield control for minor road),
    - `III` (AASHTO 1990/1994 ISD Case III, stop control for minor road, all sub-cases),
    - `III-A` (AASHTO 1990/1994 ISD Case III-A, stop control for minor road, crossing maneuver),
    - `III-B` (AASHTO 1990/1994 ISD Case III-B, stop control for minor road, turning left),
    - `III-C` (AASHTO 1990/1994 ISD Case III-C, stop control for minor road, turning right),
    - `IV` (AASHTO 1990/1994 ISD Case IV, signalized) and
    - `V` (AASHTO 1994 ISD Case V, stopped vehicle turning left from major road).
  - **Traffic Control** Item - This item specifies the traffic control for the intersection. For *stop* and *yield* controlled intersections, control for each approach is specified as a leg attribute. The enumeration values are:
    - `stop` (stop-controlled intersection, e.g. some legs are stop controlled, some legs are uncontrolled),
    - `signal` (signalized intersection, e.g. all legs are signal controlled),
    - `all-way stop` (all-way stop controlled intersection, e.g. all legs are stop controlled),
    - `yield` (yield controlled intersection, e.g. some legs are yield controlled, some legs are uncontrolled) and
    - `none` (uncontrolled intersection, e.g. all legs are uncontrolled).
  - **Classification** Item - . The enumeration values are:
    - `minor` (approach is a minor highway) and
    - `major` (approach is a major highway).
  - **ISD Applicability** Item - This item is the ISD intersection control/maneuver case. The enumeration values are:
    - `perform` (perform analysis),
    - `invalid` (case not valid),
    - `skew60` (perform analysis if intersection skew angle is less that 60 degrees) and
    - `III` (perform Case III analysis).

2.2.1.23 Clear Zone Tables Tab

The `Clear Zone Tables` tab includes the following sub-tabs: Clear Zone Value Table and Clear Zone Correction Table. The Edit IHSDM Policy Tables Frame includes the tabs described in the following sections.

2.2.1.23.1 Clear Zone Value Table Tab

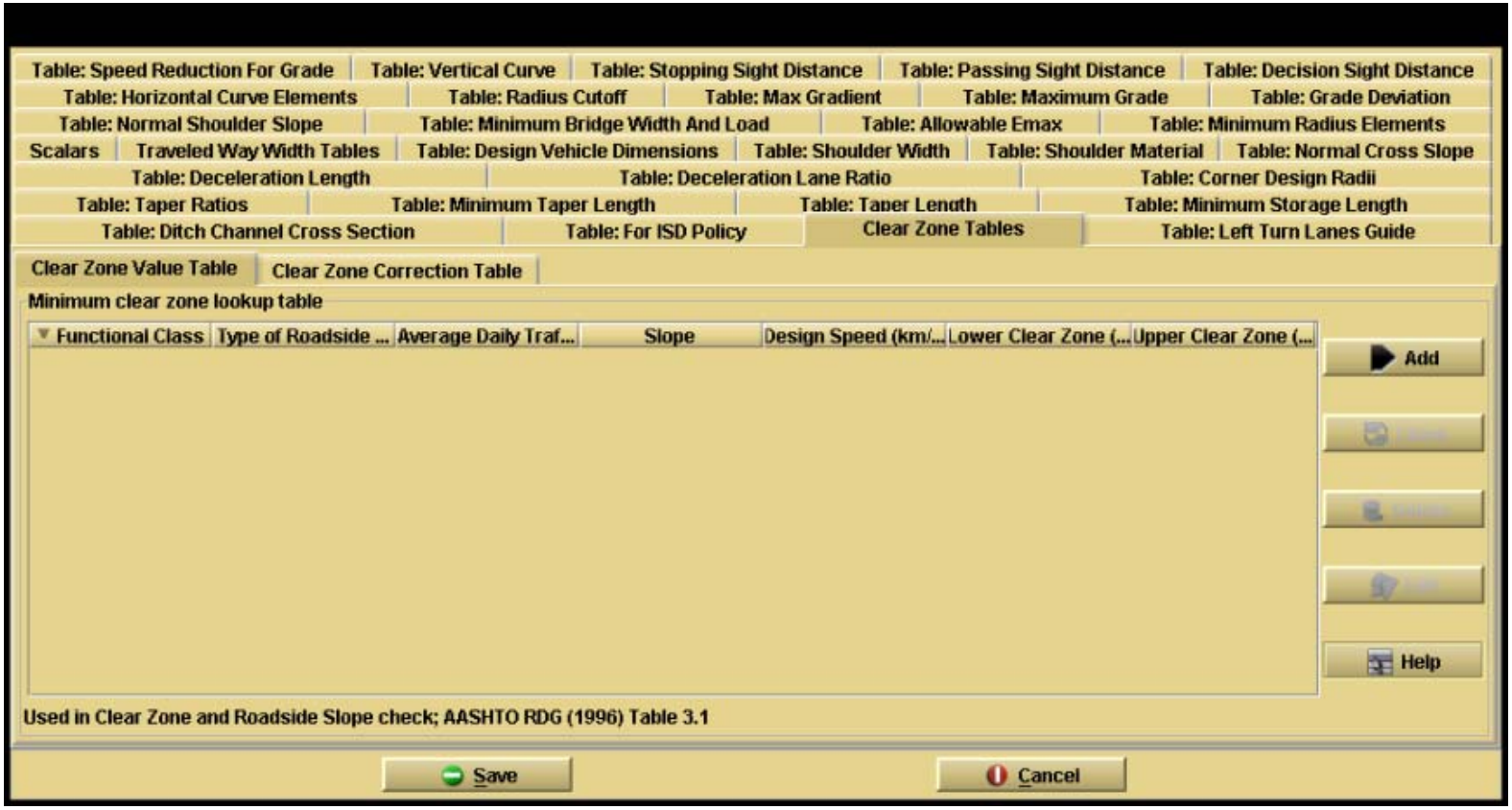

Figure 36 Clear Zone Tables/Clear Zone Value Table Tab

The `Clear Zone Value Table` tab includes the following widgets: Clear Zone Value Table.

- **Clear Zone Value Table** List Box - Widget type: list box. This item is the minimum clear zone lookup table. This element represents data as specified by Table 3.1 of the AASHTO Roadside Design Guide (RDG), January 1996. This item is used in the Clear Zone and Roadside Slope check. The `Clear Zone Value Table` list box includes the following items: Functional Class, Type of Roadside Slope, Average Daily Traffic, Slope, Design Speed, Lower Clear Zone and Upper Clear Zone.
    - **Functional Class** Item - This combo box determines the functional classification of a highway. The functional classification of a highway describes the character of service it is intended to provide. The enumeration values are: `arterial`, `collector` and `local`.
    - **Type of Roadside Slope** Item - This item is the type of eoadside slope. The enumeration values are: `cut` and `fill`.

- **Average Daily Traffic** Item - Unit of measure: vehicles/day. The value of this item is the average daily traffic (ADT). The unit of measure for this item is vehicles/day.
- **Slope** Item - Unit of measure: rise:run. The value of this item is the roadside cross slope. A negative value denotes a fill slope (e.g. the ground elevation decreases moving away from the shoulder); a positive value denotes a cut slope (ground elevation increases moving away from the shoulder). This item may be expressed as a ratio of 'rise:run', e.g., 1:10 denotes a 10% slope. The unit of measure for this item is rise:run.
- **Design Speed** Item - Unit of measure: kilometers/hour (miles/hour). The value of this item is the design speed for the highway. The 2001 AASHTO policy defines design speed as a selected value used to determine the various geometric design features of the highway. The unit of measure for this item is kilometers/hour (miles/hour).
- **Lower Clear Zone** Item - Unit of measure: meters (feet). This item is the lower clear zone. Clear zone is the unobstructed, relatively flat area beyond the edge of traveled way. The unit of measure for this item is meters (feet).

  WSDOT uses 10 feet for its Lower Clear Zone for a 35mph Design Speed.

- **Upper Clear Zone** Item - Unit of measure: meters (feet). This item is the upper clear zone. Clear zone is the unobstructed, relatively flat area beyond the edge of traveled way. The unit of measure for this item is meters (feet).

2.2.1.23.2 Clear Zone Correction Table Tab

Figure 37 Clear Zone Tables/Clear Zone Correction Table Tab

The `Clear Zone Correction Table` tab includes the following widgets: Clear Zone Correction Table.

- **Clear Zone Correction Table** List Box - Widget type: list box. This item is the clear zone correction factor. This element represents data as specified by Table 3.2 of the AASHTO Roadside Design Guide (RDG), January 1996. This item is used in the Clear Zone and Roadside Slope check. The `Clear Zone Correction Table` list box includes the following items: Design Speed, Curve Radius and Clear Zone Correction Factor.
    - **Design Speed** Item - Unit of measure: kilometers/hour (miles/hour). The value of this item is the design speed for the highway. The 2001 AASHTO policy defines design speed as a selected value used to determine the various geometric design features of the highway. The unit of measure for this item is kilometers/hour (miles/hour).
    - **Curve Radius** Item - Unit of measure: meters (feet). The value of this item is the radius of curvature. Choice of curve radii is related to design speed, maximum superelevation rates, and location (rural or urban). The unit of measure for this item is meters (feet).

- **Clear Zone Correction Factor** Item - .

2.2.1.24 Table: Left Turn Lanes Guide Tab

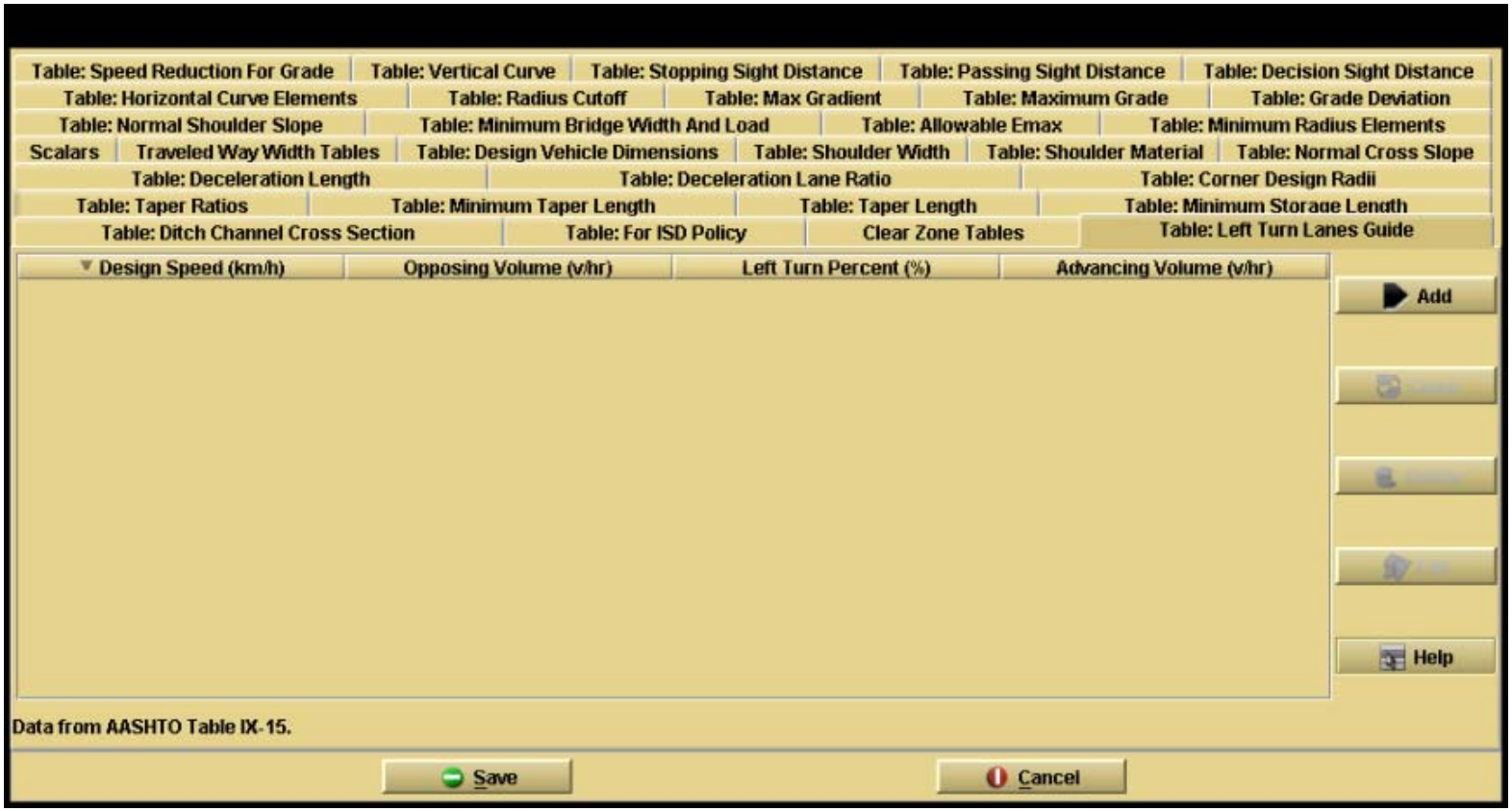

Figure 38 Table: Left Turn Lanes Guide Tab

The `Table: Left Turn Lanes Guide` tab includes the following widgets: Row: Advancing Volume/Hour.

- **Row: Advancing Volume/Hour** List Box - Widget type: list box. This table is the advancing volume/hour lookup table. Reference data from AASHTO Table IX-15. The `Row: Advancing Volume/Hour` list box includes the following items: Design Speed, Opposing Volume, Left Turn Percent and Advancing Volume.
  - **Design Speed** Item - Unit of measure: kilometers/hour (miles/hour). The value of this item is the design speed for the highway. The 2001 AASHTO policy defines design speed as a selected value used to determine the various geometric design features of the highway. The unit of measure for this item is kilometers/hour (miles/hour).

- **Opposing Volume** Item - Unit of measure: vehicles/hour. The value of this item is the advancing volume/hour lookup table for opposing volume. The unit of measure for this item is vehicles/hour.
- **Left Turn Percent** Item - Unit of measure: percent. This item is the advancing volume/hour lookup table, Left turn percent. The unit of measure for this item is percent.
- **Advancing Volume** Item - Unit of measure: vehicles/hour. This item is the advancing volume/hour lookup table, advancing volume. The unit of measure for this item is vehicles/hour.

2.2.1.25 Table: Taper Ratios Tab

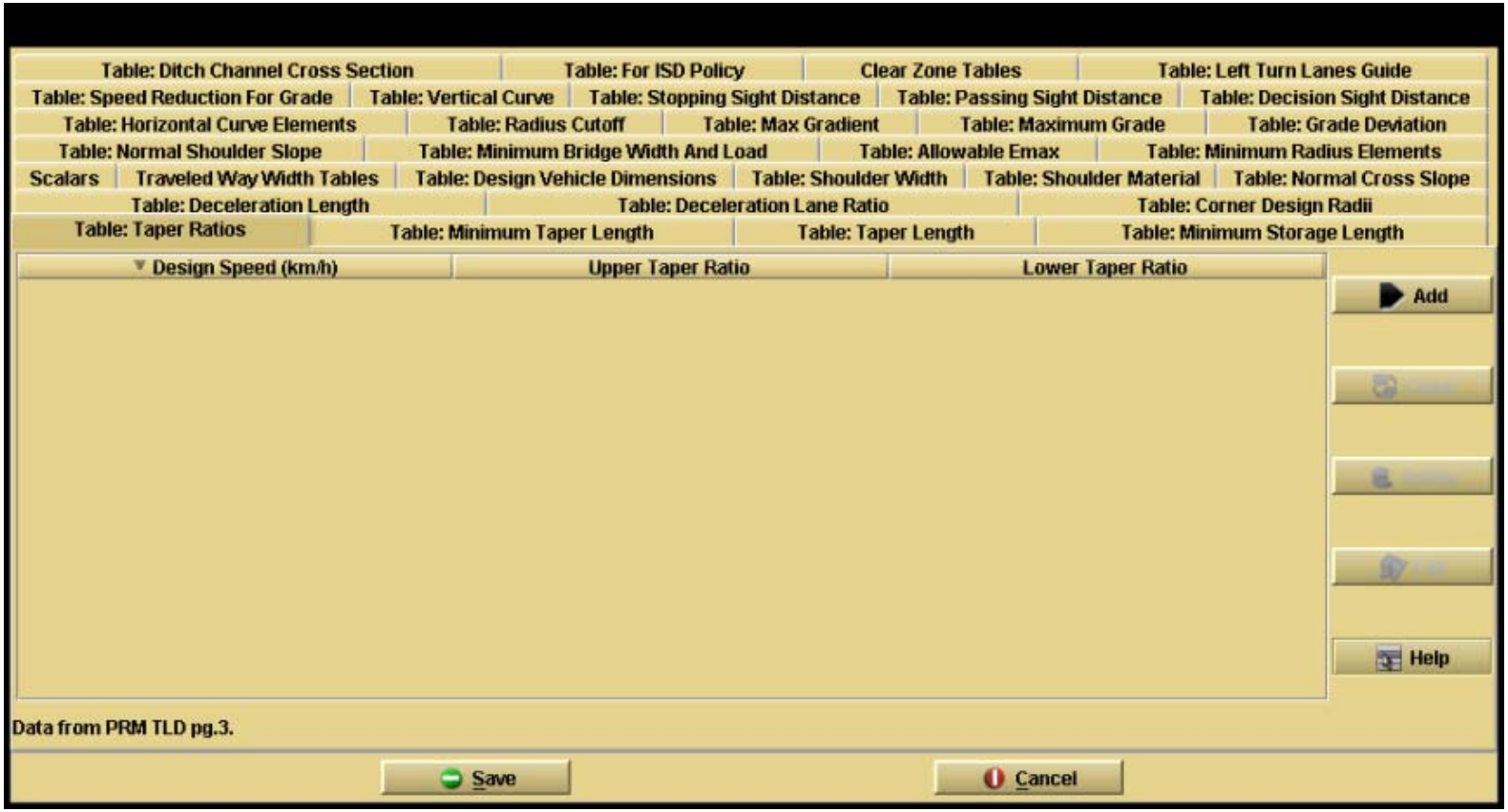

Figure 39 Table: Taper Ratios Tab

The **`Table: Taper Ratios`** tab includes the following widgets: Row: Taper Ratios.

- **Row: Taper Ratios** List Box - Widget type: list box. This table is the policy table, taper ratios lookup table. Reference data from PRM TLD pg.3. The **`Row: Taper Ratios`** list box includes the following items: Design Speed, Upper Taper Ratio and Lower Taper Ratio.
    - **Design Speed** Item - Unit of measure: kilometers/hour (miles/hour). The value of this item is the design speed for the highway. The 2001 AASHTO policy defines design speed as a selected value used to determine the various geometric design features of the highway. The unit of measure for this item is kilometers/hour (miles/hour).
    - **Upper Taper Ratio** Item - Unit of measure: rise:run. This item is the upper taper ratio. The representation is specified as a ratio (rise:run). The unit of measure for this item is rise:run.
    - **Lower Taper Ratio** Item - Unit of measure: rise:run. This item is the lower taper ratio. The representation is specified as a ratio (rise:run). The unit of measure for this item is rise:run.

2.2.1.26 Table: Minimum Taper Length Tab

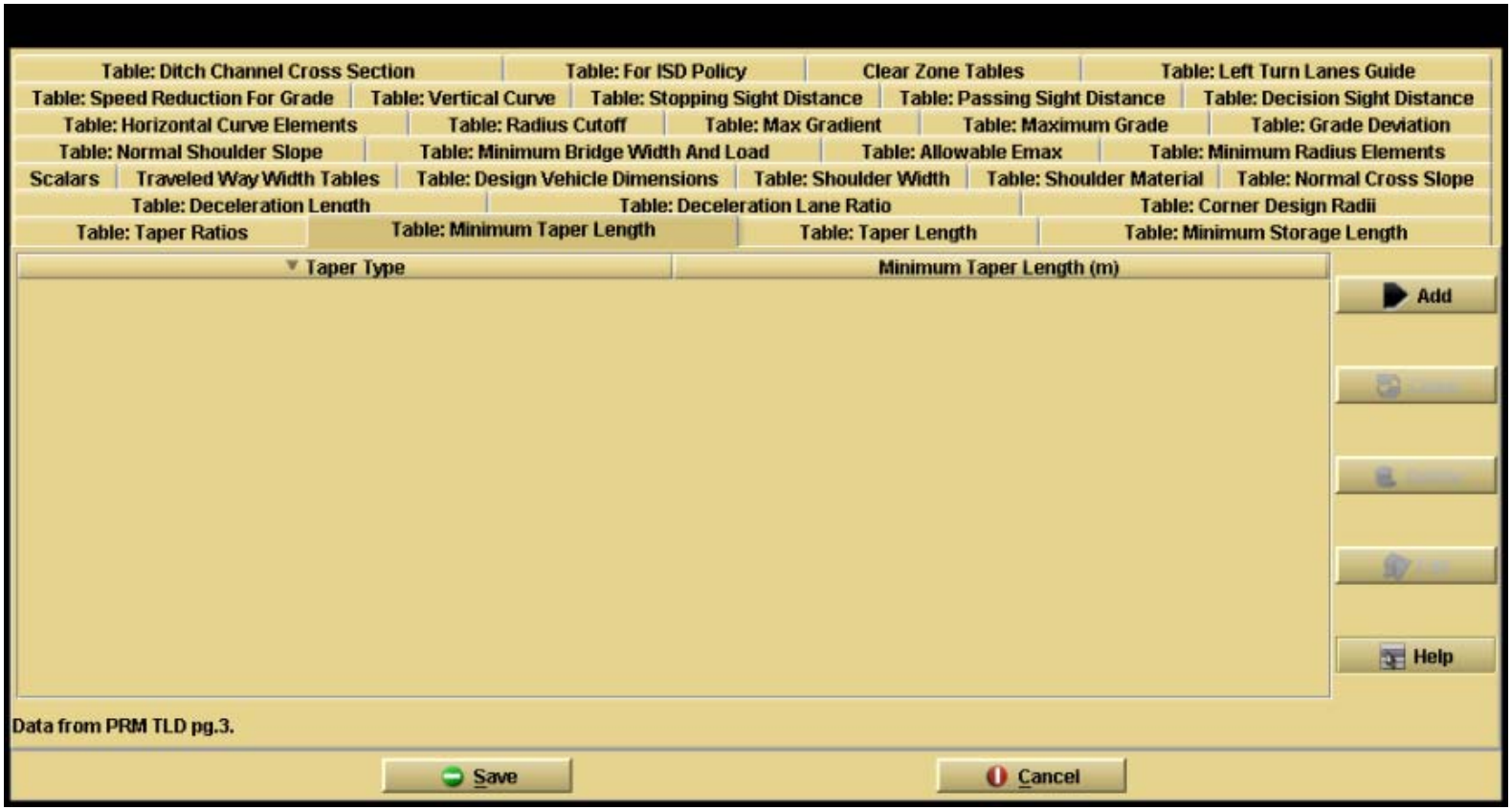

Figure 40 Table: Minimum Taper Length Tab

The `Table: Minimum Taper Length` tab includes the following widgets: Row: MinTaperLenValues.

- **Row: MinTaperLenValues** List Box - Widget type: list box. This table is the policy table, MinTaperLenValues lookup table. Reference data from PRM TLD pg.3. The `Row: MinTaperLenValues` list box includes the following items: Taper Type and Minimum Taper Length.
    - **Taper Type** Item - This combo box determines the taper type. Taper Type: straight line, partial tangent, symmetrical reverse curve, asymmetrical reverse curve. The enumeration values are: `straight line`, `partial tangent`, `symmetrical reverse curve` and `asymmetrical reverse curve`.
    - **Minimum Taper Length** Item - Unit of measure: meters (feet). This item is the minimum taper length. The unit of measure for this item is meters (feet).

2.2.1.27 Table: Taper Length Tab

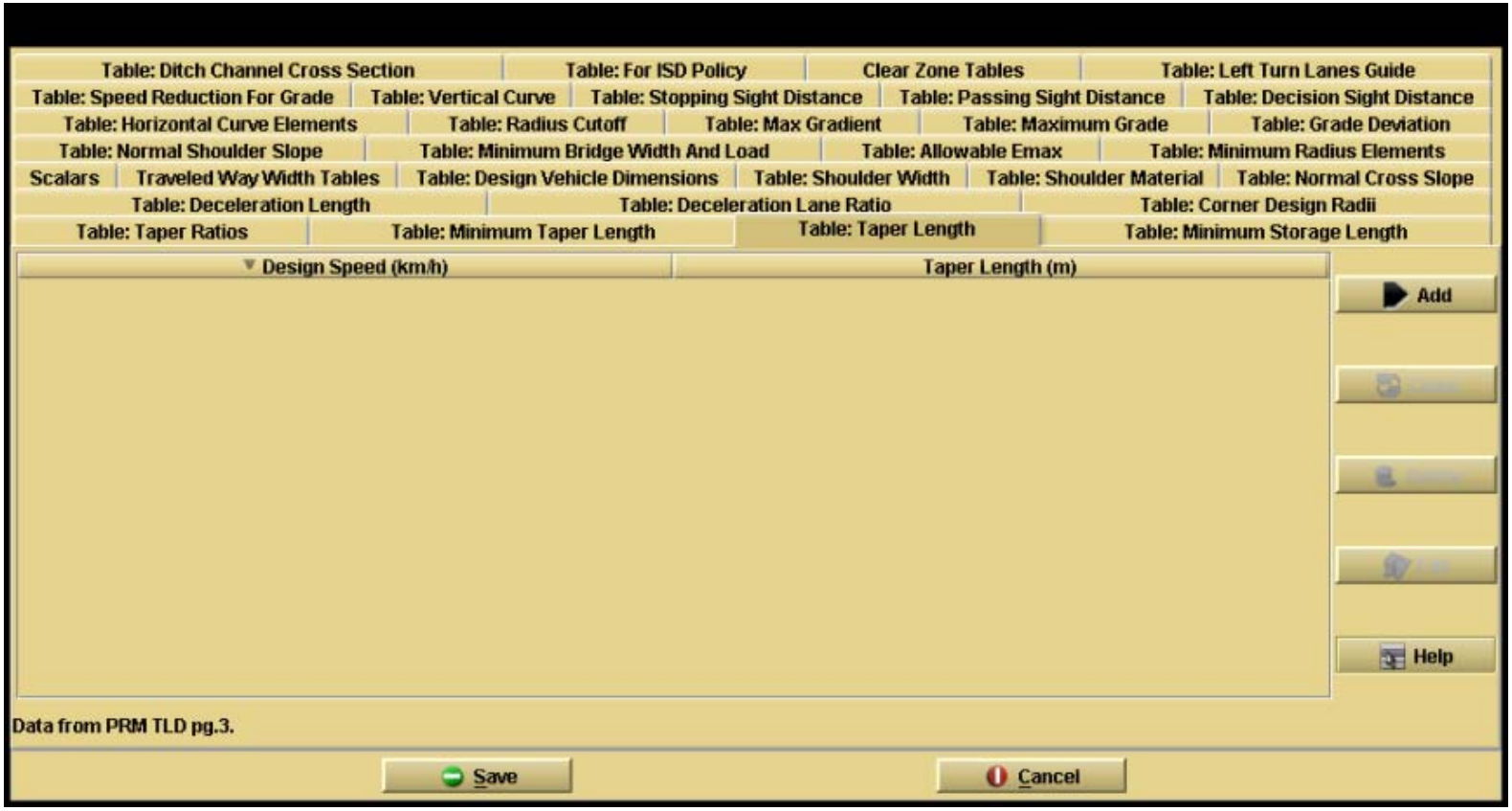

Figure 41 Table: Taper Length Tab

The **Table: Taper Length** tab includes the following widgets: Row: TaperLenValues.

- **Row: TaperLenValues** List Box - Widget type: list box. This table is the policy table, TaperLenValues lookup table. Reference data from PRM TLD pg.3. The **Row: TaperLenValues** list box includes the following items: Design Speed and Taper Length.
  - **Design Speed** Item - Unit of measure: kilometers/hour (miles/hour). The value of this item is the design speed for the highway. The 2001 AASHTO policy defines design speed as a selected value used to determine the various geometric design features of the highway. The unit of measure for this item is kilometers/hour (miles/hour).
  - **Taper Length** Item - Unit of measure: meters (feet). This item is the taper length. The unit of measure for this item is meters (feet).

2.2.1.28 Table: Minimum Storage Length Tab

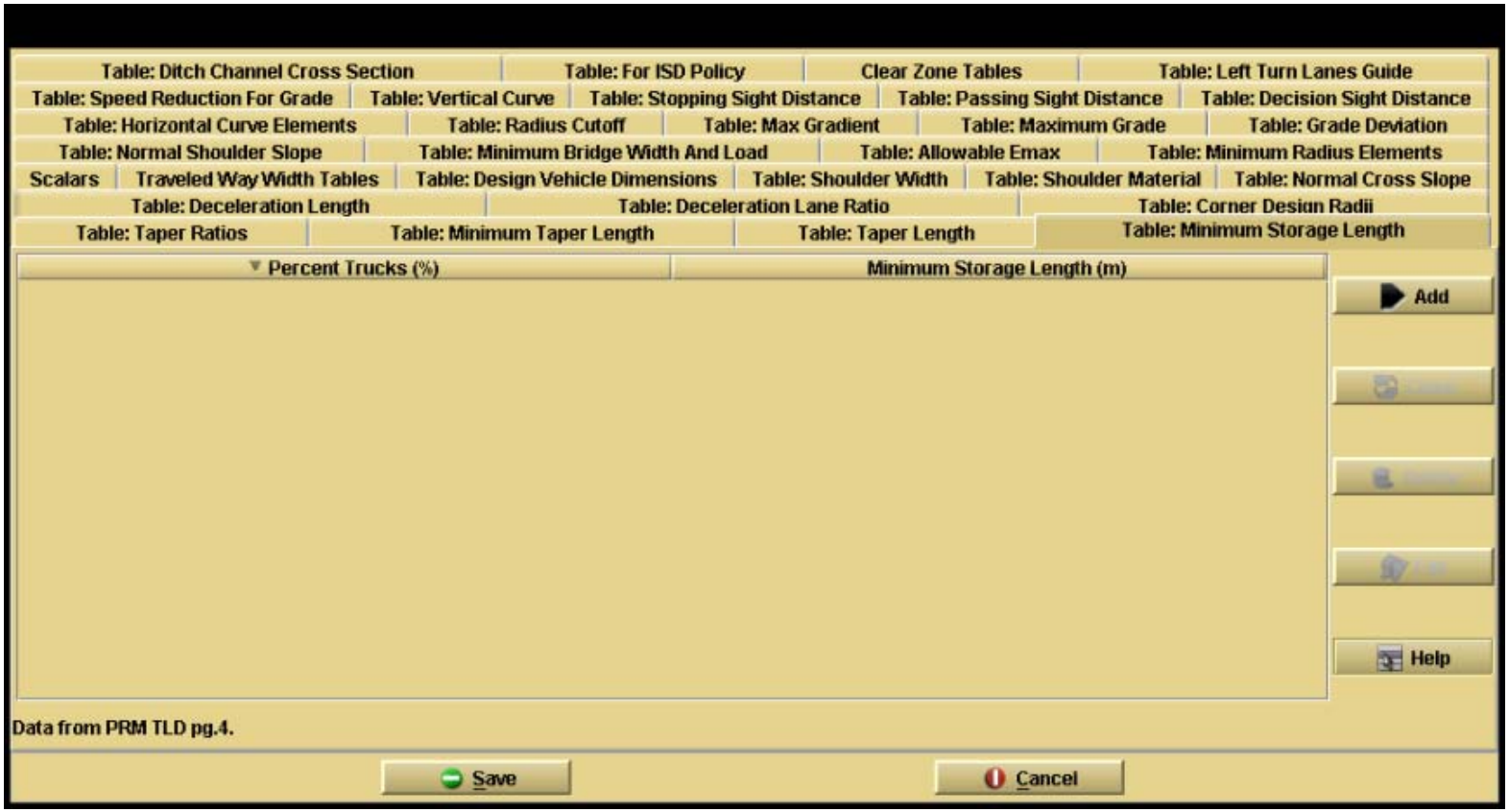

Figure 42 Table: Minimum Storage Length Tab

The **`Table: Minimum Storage Length`** tab includes the following widgets: Row: MinStorageLenValues.

- **Row: MinStorageLenValues** List Box - Widget type: list box. This table is the policy table, MinStorageLenValues lookup table. Reference data from PRM TLD pg.4. The **`Row: MinStorageLenValues`** list box includes the following items: Percent Trucks and Minimum Storage Length.
  - **Percent Trucks** Item - Unit of measure: percent. The value of this item is the percentage of turning traffic that are trucks. The unit of measure for this item is percent.
  - **Minimum Storage Length** Item - Unit of measure: meters (feet). This item is the minimum storage length. The unit of measure for this item is meters (feet).

2.2.1.29 Table: Deceleration Length Tab

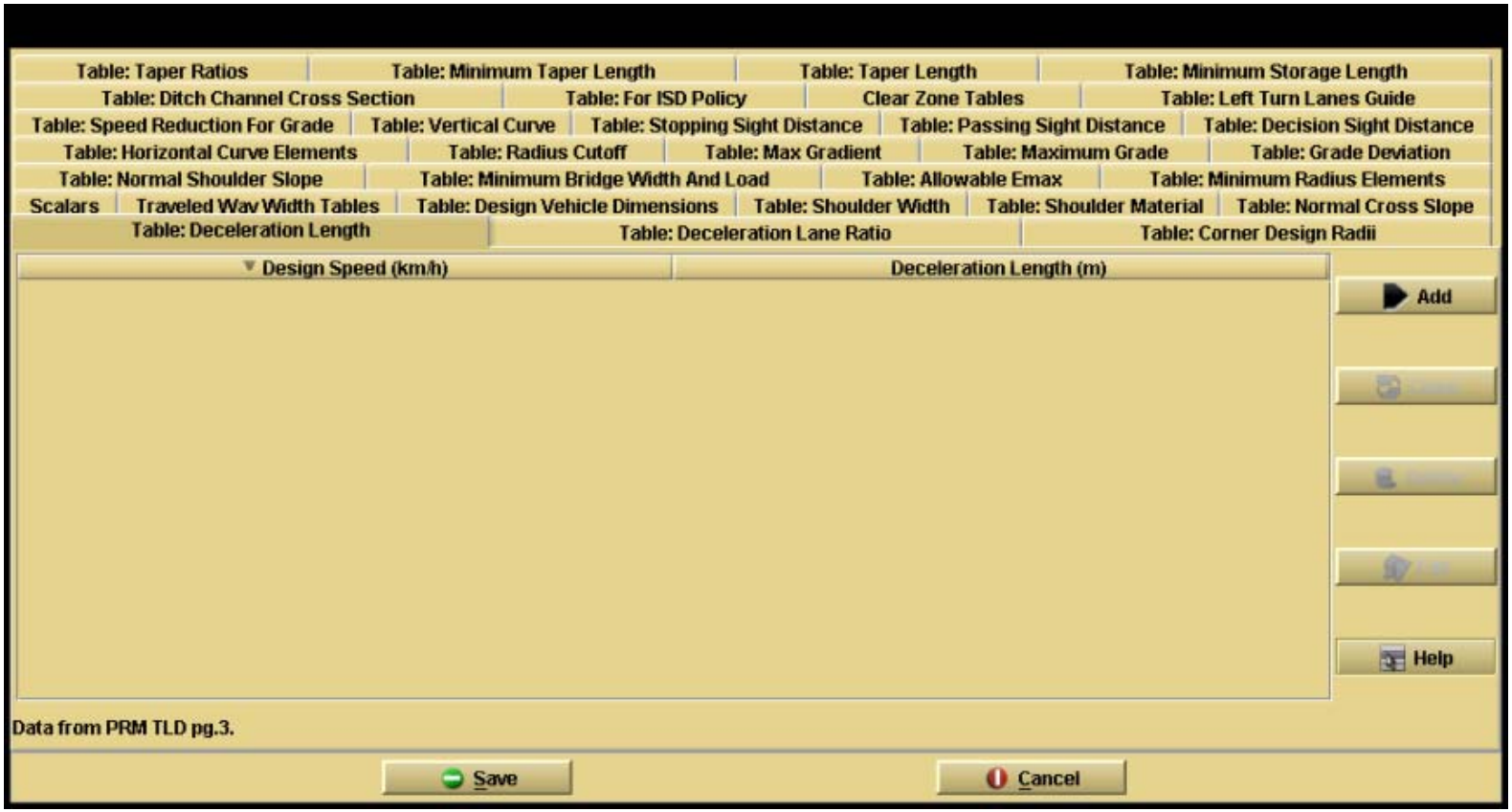

Figure 43 Table: Deceleration Length Tab

The **`Table: Deceleration Length`** tab includes the following widgets: Row: DecelLenValues.

- **Row: DecelLenValues** List Box - Widget type: list box. This table is the policy table, DecelLenValues lookup table. Reference data from PRM TLD pg.3. The `Row: DecelLenValues` list box includes the following items: Design Speed and Deceleration Length.
    - **Design Speed** Item - Unit of measure: kilometers/hour (miles/hour). The value of this item is the design speed for the highway. The 2001 AASHTO policy defines design speed as a selected value used to determine the various geometric design features of the highway. The unit of measure for this item is kilometers/hour (miles/hour).
    - **Deceleration Length** Item - Unit of measure: meters (feet). This item is the deceleration length. The unit of measure for this item is meters (feet).

2.2.1.30 Table: Deceleration Lane Ratio Tab

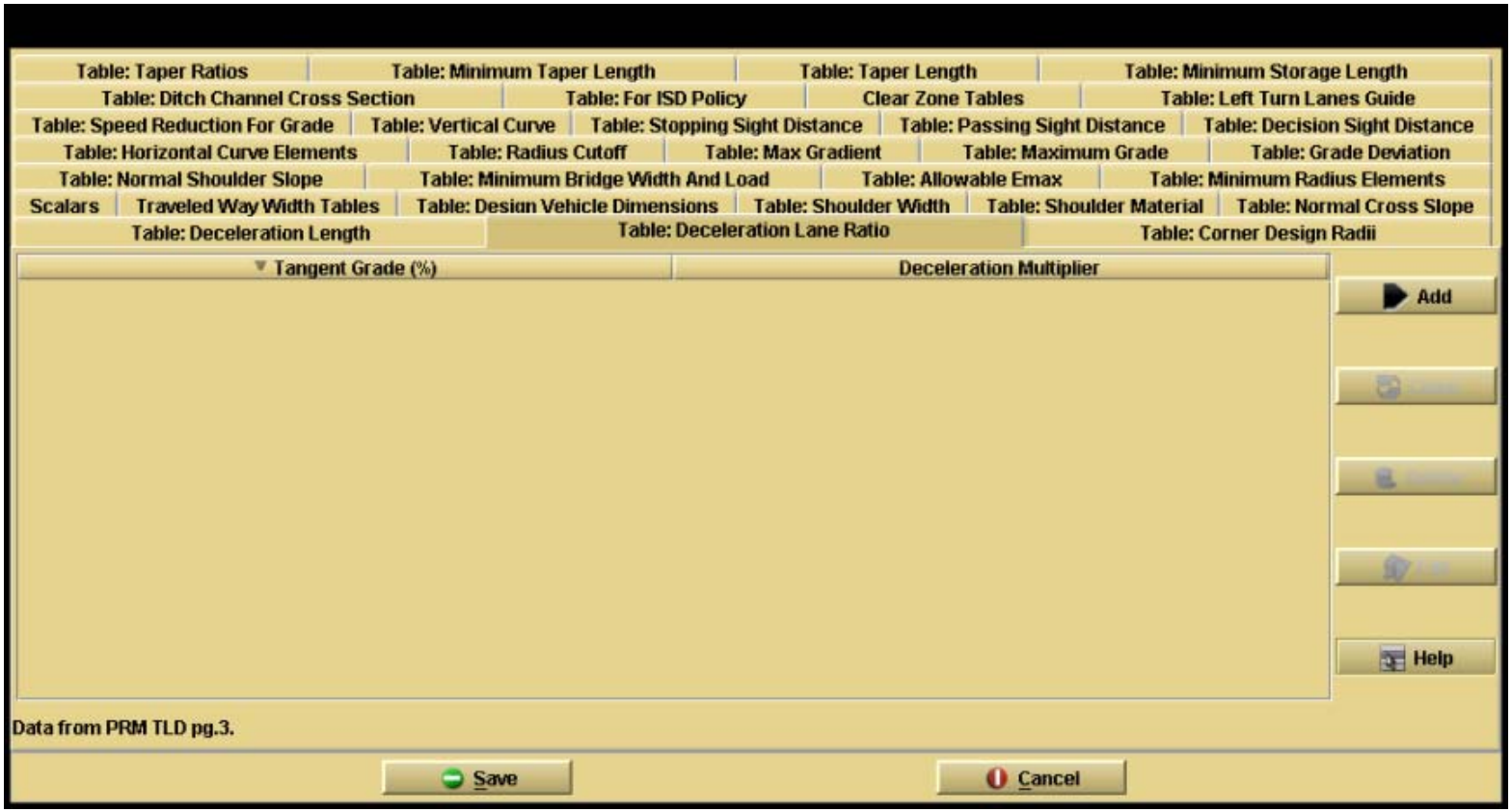

Figure 44 Table: Deceleration Lane Ratio Tab

The `Table: Deceleration Lane Ratio` tab includes the following widgets: Row: DecelLaneRatioValues .

- **Row: DecelLaneRatioValues** List Box - Widget type: list box. This table is the policy table, DecelLaneRatioValues lookup table. Reference data from PRM TLD pg.3. The **`Row: DecelLaneRatioValues`** list box includes the following items: Tangent Grade and Deceleration Multiplier.
    - **Tangent Grade** Item - Unit of measure: percent. The value of this item is the tangent grade. -% is descending; +% is ascending. The unit of measure for this item is percent.
    - **Deceleration Multiplier** Item - This item is the deceleration multiplier.

2.2.1.31 Table: Corner Design Radii Tab

The **`Table: Corner Design Radii`** tab includes the following sub-tabs: Row: Simple Curve Corner Radii, Row: Simple Curve With Taper Corner Radii, Offset And Taper, Row: Symmetric Compound Curve Corner, Asymmetric Compound Curve Corner, Row: Minimum Radii For Intersection Curves and Row: Corner Radius Case Speed. The Edit IHSDM Policy Tables Frame includes the tabs described in the following sections.

2.2.1.31.1 Row: Simple Curve Corner Radii Tab

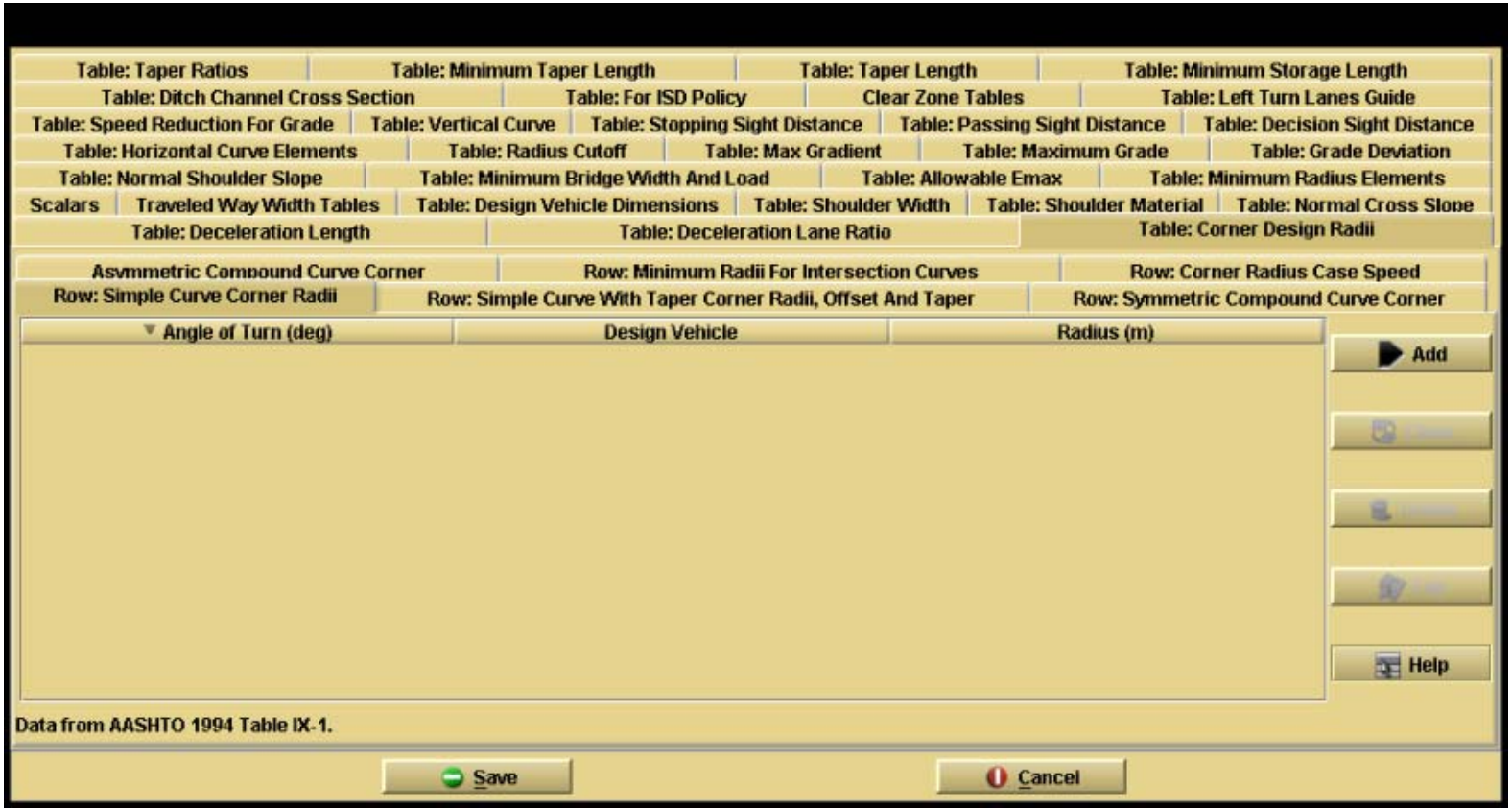

Figure 45 Table: Corner Design Radii/Row: Simple Curve Corner Radii Tab

The `Row: Simple Curve Corner Radii` tab includes the following widgets: Row: Simple Curve Corner Radii.

- **Row: Simple Curve Corner Radii** List Box - Widget type: list box. This table is the simple curve corner radii lookup table. Reference data from AASHTO 1994 Table IX-1. The `Row: Simple Curve Corner Radii` list box includes the following items: Angle of Turn, Design Vehicle and Radius.
    - **Angle of Turn** Item - Unit of measure: degrees. This item is the angle of turn for a corner. The unit of measure for this item is degrees.

      WSDOT uses 60-120 degrees for its Angle of Turn.

    - **Design Vehicle** Item - This combo box determines the vehicles typical in this design. A value must be specified for this item.

- **Radius** Item - Unit of measure: meters (feet). The value of this item is the radius of the corner curve. The unit of measure for this item is meters (feet).

2.2.1.31.2 Row: Simple Curve With Taper Corner Radii, Offset And Taper Tab

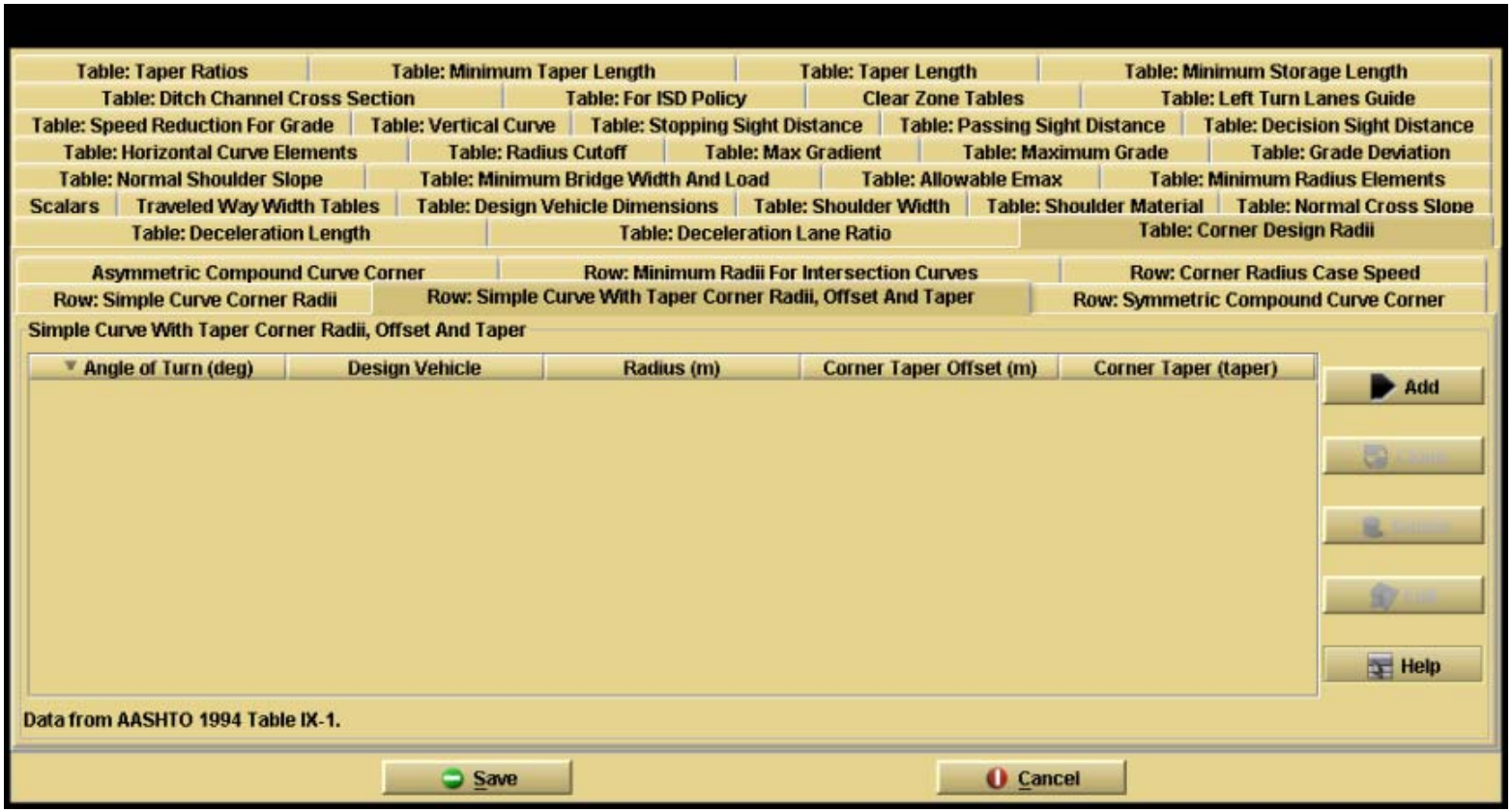

Figure 46 Table: Corner Design Radii/Row: Simple Curve With Taper Corner Radii, Offset And Taper Tab

The **`Row: Simple Curve With Taper Corner Radii, Offset And Taper`** tab includes the following widgets: Row: Simple Curve With Taper Corner Radii, Offset And Taper.

- **Row: Simple Curve With Taper Corner Radii, Offset And Taper** List Box - Widget type: list box. This table is the simple curve with taper corner radii, offset, and taper lookup table. Reference data from AASHTO 1994 Table IX-1. The **`Row: Simple Curve With Taper Corner Radii, Offset And Taper`** list box includes the following items: Angle of Turn, Design Vehicle, Radius, Corner Taper Offset and Corner TaperAngle of Turn, Design Vehicle, Start Radius, Middle Radius and Corner Curve Offset.

- **Angle of Turn** Item - Unit of measure: degrees. This item is the angle of turn for a corner. The unit of measure for this item is degrees.
- **Design Vehicle** Item - This combo box determines the vehicles typical in this design. A value must be specified for this item.
- **Radius** Item - Unit of measure: meters (feet). The value of this item is the radius of the corner curve. The unit of measure for this item is meters (feet).
- **Corner Taper Offset** Item - Unit of measure: meters (feet). The value of this item is the offset of the corner taper. The unit of measure for this item is meters (feet).
- **Corner Taper** Item - Unit of measure: TAPER. The value of this item is the corner taper ratio.

2.2.1.31.3 Row: Symmetric Compound Curve Corner Tab

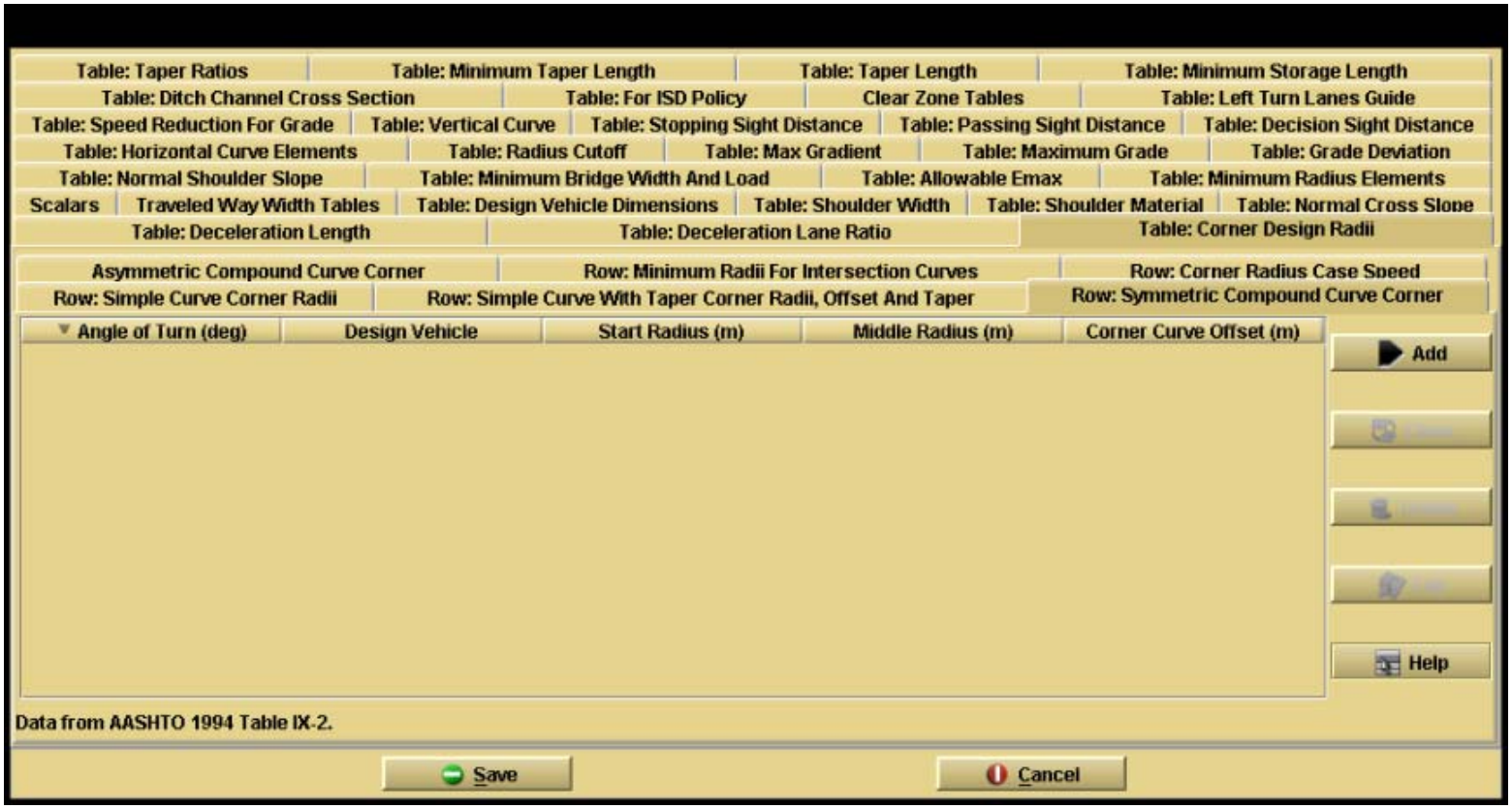

Figure 47 Table: Corner Design Radii/Row: Symmetric Compound Curve Corner Tab

The `Row: Symmetric Compound Curve Corner` tab includes the following widgets: Row: Symmetric Compound Curve Corner.

- **Row: Symmetric Compound Curve Corner** List Box - Widget type: list box. This table is the symmetric compound curve corner lookup table. Reference data from AASHTO 1994 Table IX-2. The **`Row: Symmetric Compound Curve Corner`** list box includes the following items: Angle of Turn, Design Vehicle, Start Radius, Middle Radius and Corner Curve Offset.
    - **Angle of Turn** Item - Unit of measure: degrees. This item is the angle of turn for a corner. The unit of measure for this item is degrees.
    - **Design Vehicle** Item - This combo box determines the vehicles typical in this design. A value must be specified for this item.
    - **Start Radius** Item - Unit of measure: meters (feet). The value of this item is the radius of the start (first) corner curve. The unit of measure for this item is meters (feet).
    - **Middle Radius** Item - Unit of measure: meters (feet). The value of this item is the radius of the middle (second) corner curve. The unit of measure for this item is meters (feet).
    - **Corner Curve Offset** Item - Unit of measure: meters (feet). The value of this item is the offset of the corner curve. The unit of measure for this item is meters (feet).

2.2.1.31.4 Asymmetric Compound Curve Corner Tab

Figure 48 Table: Corner Design Radii/Asymmetric Compound Curve Corner Tab

The **`Asymmetric Compound Curve Corner`** tab includes the following widgets: Asymmetric Compound Curve Corner.

- **Asymmetric Compound Curve Corner** List Box - Widget type: list box. This table is the symmetric compound curve corner lookup table. Reference data from AASHTO 1994 Table IX-2. The **`Asymmetric Compound Curve Corner`** list box includes the following items: Angle of Turn, Design Vehicle, Start Radius, Middle Radius, End Radius, Start Curve Offset and End Curve Offset.
    - **Angle of Turn** Item - Unit of measure: degrees. This item is the angle of turn for a corner. The unit of measure for this item is degrees.
    - **Design Vehicle** Item - This combo box determines the vehicles typical in this design. A value must be specified for this item.
    - **Start Radius** Item - Unit of measure: meters (feet). The value of this item is the radius of the start (first) corner curve. The unit of measure for this item is meters (feet).

- **Middle Radius** Item - Unit of measure: meters (feet). The value of this item is the radius of the middle (second) corner curve. The unit of measure for this item is meters (feet).
- **End Radius** Item - Unit of measure: meters (feet). The value of this item is the radius of the end (third) corner curve. The unit of measure for this item is meters (feet).
- **Start Curve Offset** Item - Unit of measure: meters (feet). The value of this item is the offset of the start (first) corner curve. The unit of measure for this item is meters (feet).
- **End Curve Offset** Item - Unit of measure: meters (feet). The value of this item is the offset of the end (third) corner curve. The unit of measure for this item is meters (feet).

2.2.1.31.5 Row: Minimum Radii For Intersection Curves Tab

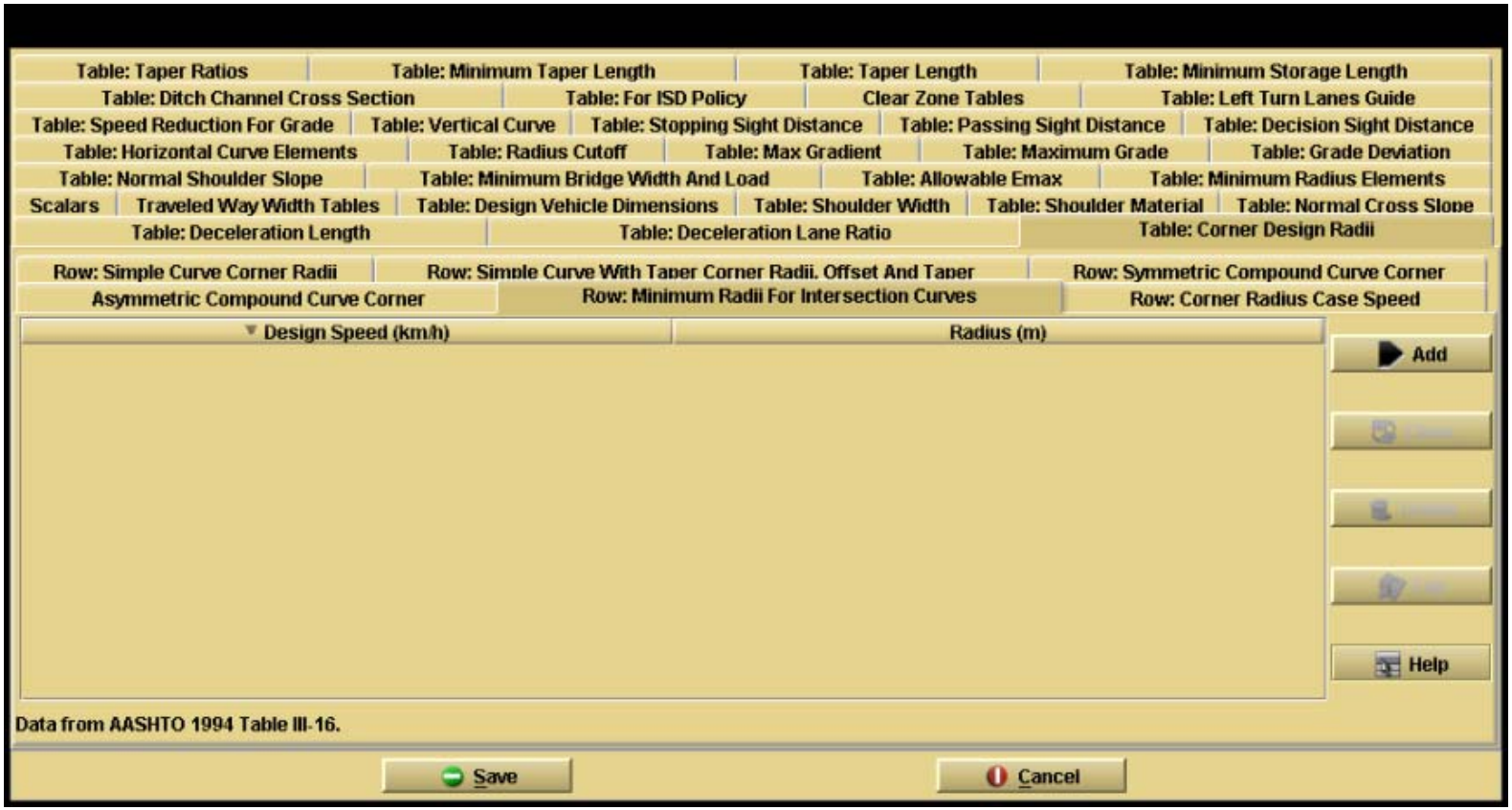

Figure 49 Table: Corner Design Radii/Row: Minimum Radii For Intersection Curves Tab

The **`Row: Minimum Radii For Intersection Curves`** tab includes the following widgets: Row: Minimum Radii For Intersection Curves.

- **Row: Minimum Radii For Intersection Curves** List Box - Widget type: list box. This table is the minimum radii for intersection curves lookup table. Reference data from AASHTO 1994 Table III-16. The `Row: Minimum Radii For Intersection Curves` list box includes the following items: Design Speed and Radius.
    - **Design Speed** Item - Unit of measure: kilometers/hour (miles/hour). The value of this item is the design speed for the highway. The 2001 AASHTO policy defines design speed as a selected value used to determine the various geometric design features of the highway. The unit of measure for this item is kilometers/hour (miles/hour).
    - **Radius** Item - Unit of measure: meters (feet). The value of this item is the radius of the corner curve. The unit of measure for this item is meters (feet).

2.2.1.31.6 Row: Corner Radius Case Speed Tab

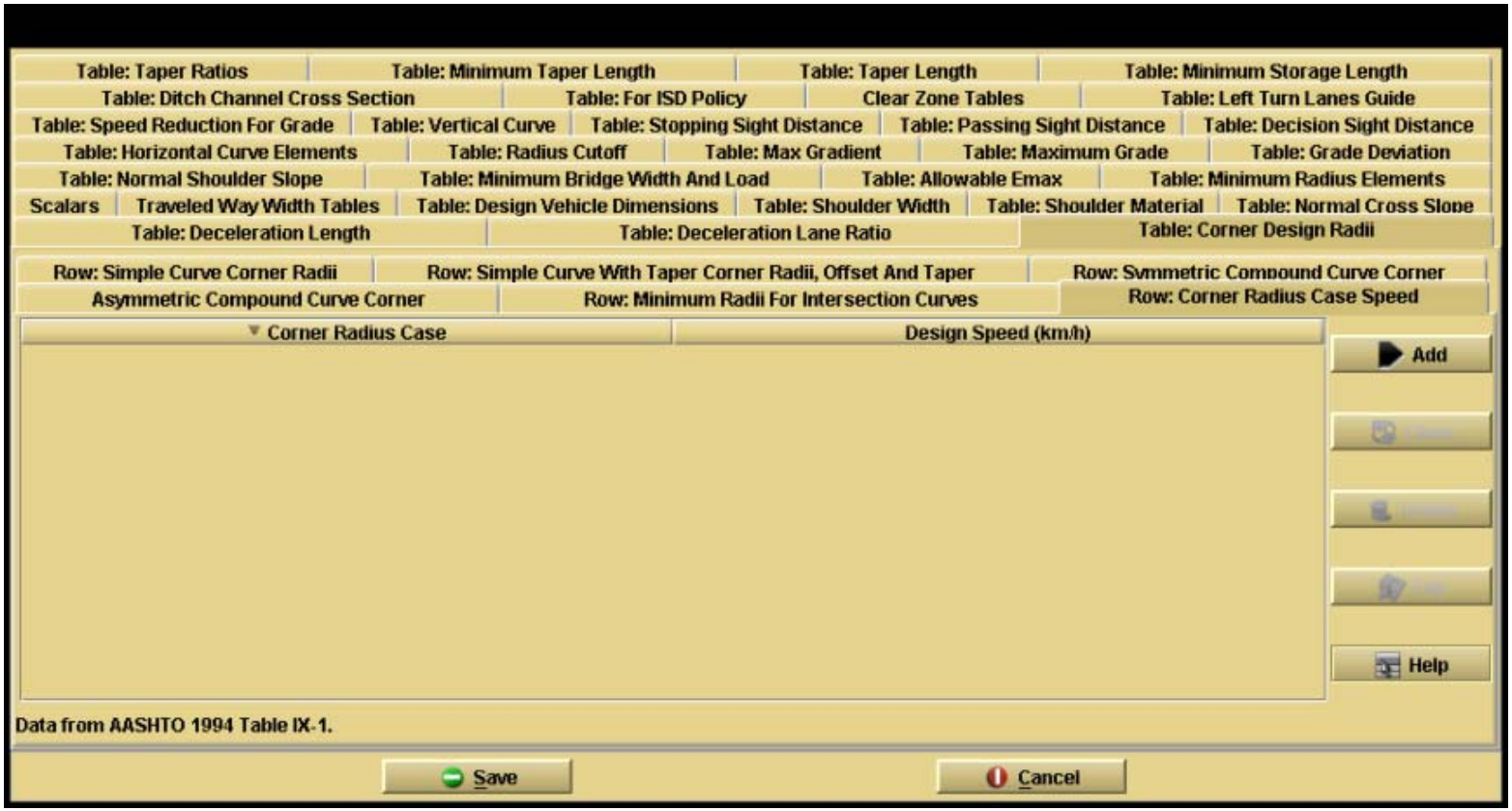

Figure 50 Table: Corner Design Radii/Row: Corner Radius Case Speed Tab

The `Row: Corner Radius Case Speed` tab includes the following widgets: Row: Corner Radius Case Speed.

- **Row: Corner Radius Case Speed** List Box - Widget type: list box. This table is the corner speed case cutoffs for evaluation of the IRM Corner Radius Check. Reference data from AASHTO 1994 Table IX-1. The `Row: Corner Radius Case Speed` list box includes the following items: Corner Radius Case and Design Speed.
    - **Corner Radius Case** Item - . The enumeration values are: `Case I`, `Case II` and `Case III`.
    - **Design Speed** Item - Unit of measure: kilometers/hour (miles/hour). The value of this item is the design speed for the highway. The 2001 AASHTO policy defines design speed as a selected value used to determine the various geometric design features of the highway. The unit of measure for this item is kilometers/hour (miles/hour).